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ABSTRACT

These papers discuss various options for a computerized national bibliographic network and highlight the problems and potential of developing such a database. Following a brief explanation of the conference purpose and organization, 10 primary papers are presented: (1) "A Brief Overview of Computerized Library Networking in Canada," by Peter Simmons; (2) "National Library of Canada Five-year Plan Overview," by Hope Clement; (3) "What Do CARL Libraries Need or Want from a Bibliographic/Resource Sharing Network?" by Guy Cloutier; (4) "The Functions of an Integrated Bibliographic Network," by Donald Simpson; (5) "Why a Research Libraries Network?" by Edward Shaw; (6) "Standards in a National Bibliographic/Resource Sharing Network," by Cynthia Durance; (7) Distributive Processing in the Context of an Automated Bibliographic Network," by S. Michael Malinconico; (8) "The Management of the Great Canadian Library Network, or It Would Be Easier to Find the Holy Grail," by Basis Stuart-Stubbs; (9) "National Network Development: Problematic Yet Pandemic," by C. Lee Jones; and (10) "Organizing for a National Bibliographic/Resource Sharing Network: Action Plan," by Hans Moller. Closing papers present summations of the proceedings by American and Canadian reactors, Richard De Gennaro and D. W. Halliwell respectively. (LMM)

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CANADIAN ASSOCIATION OF RESEARCH LIBRARIES

ASSOCIATION DES BIBLIOTHEQUES DE RECHERCHE DU CANADA

Proceedings of the Conference on

A NATIONAL BIBLIOGRAPHIC/RESOURCE SHARING NETWORK FOR CANADIAN ACADEMIC LIBRARIES

October 24 & 25, 1979

Château Bonne Entente

Ste-Foy, Quebec

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PREFACE

The Canadian Association of Research Libraries (CARL) is an association of the chief librarians of thirty major university libraries in Canada. Membership is open to any library system of a Canadian university which graduates doctoral candidates in the arts, social sciences and the sciences.

This document constitutes the texts of papers presented at the Canadian Association of Research Libraries' Conference on A National Bibliographic/Resource Sharing Network for Canadian Academic Libraries held on October 24 & 25, 1979 at the Château Bonne Entente in Ste-Foy, Quebec.

The past few years have seen many dramatic changes in university libraries. No change will have a greater impact on the future than the increasing use of computers in the collection, storage and manipulation of bibliographic data. Libraries have moved rapidly from developing local data bases, to accessing remote files, and now, in both the United States and Canada, a "national" bibliographic data base will soon be available. The form this will take in Canada has been the subject of considerable discussion and investigation - most recently in the studies by the Canadian Computerized Bibliographic Centre.

As the libraries of CARL members (including the National Library of Canada, C.I.S.T.I., and the Bibliothèque nationale du Québec) collectively contain our 'national' documentary research resource, it seemed appropriate that CARL members should want to discuss the various options for a 'National Bibliographic Network'. To assist us in providing the background for discussion, a Conference was felt to be the most appropriate forum.

Our panelists were chosen to provide the broadest spectrum of information from both the Canadian and American library communities.

The program was intended to provide information regarding the various options, as well as to highlight the problems and potential of developing a 'national' bibliographic data base.

In Canada we are fortunate in that the academic library community is still relatively small. Therefore, we are able to come together in a small group to talk to each other and formulate plans. Through such discussions, we can perceive something of the direction in which academic libraries in Canada should move.

It is the hope of the Canadian Association of Research Libraries that some kind of action plan for a national/bibliographic resource sharing network will be forthcoming as a result of this conference.

Marianne Scott
Conference Coordinator

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INTRODUCTION

In the past few years a series of bibliographic library networks of varying goals, functions and achievements, has developed in Canada. Unfortunately, this development has taken place without any reference to a specific national plan. In order to meet the goal of equalizing access by Canadians to library materials, the Canadian Association of Research Libraries hopes to encourage the development and interfacing of the existing networks. We hoped to achieve one step in this process through the 1979 Conference on Networking.

In order to facilitate discussion, the Conference attendance was limited to CARL members together with one other person from each CARL library and the speakers. It was felt that this distribution of representatives would permit librarians directly involved and interested in networking to attend the conference and contribute their ideas. The conference was represented by librarians from the five areas of Canada in which networks are developing: British Columbia, the Prairies, Ontario, Quebec, and the Atlantic Provinces. This was felt to be an important aspect as it is recognized that there are a number of regional/provincial networks, and it was important for each region to have an opportunity to express their particular needs and concerns for the future.

The conference program was designed to expose participants to the variety of networks in existence in Canada and the United States, while concentrating on the potential interface points of the existing Canadian networks.

Rather than focussing on the networks from the standpoint of regional developments or types of libraries involved, the conference was structured to draw attention to the specific interface points of the component parts of the existing systems: bibliographic, resource and communication subsystems.

The objectives of the Conference were multifold:

1) to examine the trend of network formation between Canadian libraries, comparing the various networks in existence;

2) to promote regional/provincial networking;

3) to explore the possibilities of developing interfaces between existing networks; and

4) to establish priority goals in furthering the systematic development of networks, recognizing the differing needs of various types of libraries and their users.

The conference was divided into ten sessions, the first six of which focussed on the component parts of library networks. The seventh session was on governance and was followed by two sessions on network development. Discussion groups were then formed to discuss and report on goals and objectives, communication concerns, resource dimensions - collections coordination, bibliographic dimensions, and steps to be taken in the immediate future. The closing session was devoted to summations of the proceedings by an American reactor and a Canadian reactor.

We are all indebted to the panelists for their thoughtful and thorough presentations, and I would like to extend a particular word of appreciation for their willingness to give their time and to share with us their expertise.

A Conference is often remembered not only for its content, but for its setting. A commendation should go to my Personnel Officer, Phebe Chartrand, and to Heather Halliday and Susan McCallum of my office staff, without whose care and attention to detail the Conference would not have run so smoothly, nor would these papers have appeared.

Montreal, Quebec
May 1980

Marianne Scott

A BRIEF OVERVIEW OF COMPUTERIZED LIBRARY NETWORKING IN CANADA

by
Peter Simmons
School of Librarianship
University of British Columbia

Any history of computerized library automation in Canada must, in fact, start in the United States. The development of the first, experimental MARC format at the Library of Congress in 1965, and the subsequent and longer-lived MARC II formats starting in 1968, set the stage for exactly the kind of interlibrary and, indeed, international library co-operation that has taken place in the past decade. The distribution of MARC-formatted bibliographic data by L.C., starting in the spring of 1969, similarly set a pattern that has been repeated in numerous countries, including Canada.

In May 1970, the National Library of Canada held an invitational National Conference on Cataloguing Standards, which in turn led to the formation of two task groups: one on cataloguing standards, and one devoted to the design of a Canadian MARC or "CAN/MARC" format, the latter's express purpose being "to establish standards of manual and mechanized systems adapted to Canadian needs and compatible with international standards."

The report of the task group on cataloguing standards resulted in a number of changes to Canadian classification schedules and subject headings, significant changes to Canadiana, including the production of authority and bibliographic information on COM-fiche, and the distribution of output from the National Library's bibliographic data base in a variety of formats, including magnetic tape.

The MARC Task Group reported in 1972, producing proposed new Canadian formats for the encoding in machine-readable form of bibliographic data for monographs and serials. These formed the bases of the formats we use today, which are the essential ties that bind us together. Without this common "language" of communication, the inter-library, inter-system, and international, co-operation that we are seeing today would not be possible.

The use of a common format facilitated the automated co-operation that now touches the widest possible variety of information activities across this country. Standing firmly behind this co-operation is the National Library's MARC Records Distribution Service, whose current data base contains about one-and-a-half million records from Canada, the United States, and Great Britain.

With these developments under way, the National Library, in 1972, appointed a Task Group on the National Union Catalogue, whose interim recommendations were published in early 1974, and whose Final Report appeared in 1976. The task group, chaired by Basil Stuart-Stubbs, and its subgroups, made a comprehensive study of such vital areas as the scope and composition of a machine-readable Canadian Union Catalogue, co-operative library network development, the national bibliographic data base, the union list of serials, inter-library loan problems, and so on. This wide-ranging study's stated objectives were the equalization of opportunity for access to information, and making more cost-effective use of total Canadian library resources. It recommends: the immediate closure of the existing Union Catalogue card file and substitution of a new on-line file and system; the use of an integrated file containing the union catalogue, MARC records, and National Library acquisitions and in-process files; and decentralized access to, maintenance of, and contribution to the on-line system. Interestingly, it counsels against total conversion of the existing file to machine-readable form, which would be truly a gargantuan task. In its concern with an international bibliographic data base, with the establishment of provincial or regional bibliographic centres, with the services that would be offered by a proposed Library and Information Retrieval Application Centre at the National Library, it lays out the scope and primary features of the nascent national bibliographic system.

Soon after the interim recommendations of this Task Group appeared, the National Library convened an informal seminar on bibliographic centres in a Canadian library network. Out of this 1975 meeting grew the Canadian Computerized Bibliographic Centre Study, whose seven sub-studies are concerned with identifying the principal agencies and organizations concerned with library and information network development, technical and economic aspects, compatibility considerations, funding sources, etc. The study, which we hope will soon be available, is expected to recommend that NLC should design and implement policies and programs for a nationwide on-line system to provide bibliographic information and documents. Such a recommendation would support the Canadian Union Catalogue Task Group Report and carry it further, creating a nationwide network providing access to information resources for many segments of Canadian society. One wishes that the report might recommend that NLC move as quickly as possible to the implementation phase of the program, substituting pilot projects for theoretical studies where possible. The report is also expected to address a number of subsidiary topics, including funding for network projects, co-ordination between NLC and CISTI, improved communications between NLC and the Canadian information community, access to bibliographic and other databases, document supply services, bibliographic standards, and computer-to-computer protocols, all of which form part of the proposed Canadian National On-line Bibliographic System.

Possibly anticipating the network report, and, one hopes, designed to implement it, has been the National Library's creation of a special working group to design, promote and monitor the National Library Network Project. Effective October 22nd, 1979, the project team, headed by Cynthia Durance, will advise on the development of the internal National Library Network program, and will also "ensure continuing liaison with libraries, consortia and other agencies with a view to ensuring their involvement in the planning and implementation of a nation-wide decentralized bibliographic network."

I hope you will excuse the amount of time I have spent describing the activities of a single institution, the National Library of Canada, and its task groups. But it is impossible to overemphasize the firm foundation that organization has been laying for the bibliographic developments of the future.

But despite the solidity and high quality of this foundation, which, as I have indicated, is still under construction, the "house" which it is designed to support is already occupied, and new tenants are arriving with some frequency.

In fact, one may well suggest that this house has quickly developed of its own accord, without development permission, without benefit of architects, and with little regard for the shape of the previously described foundations.

When OCLC, then called the Ohio College Library Center, started its on-line cataloguing service in Columbus, Ohio in August, 1971, it established a service pattern that has been copied, developed, and in some respects improved upon not only in the United States, but also in Canada. The University of Toronto, which had been the only non-American participant in the experimental MARC Pilot Project run by the Library of Congress in 1965 to 1967, had been involved in co-operative automation efforts as early as 1965, when it produced the book catalogues for five new Ontario University Libraries.

By the end of the 1960's, the University of Toronto had begun the conversion of its own bibliographic file; in 1971 the library's systems department was re-organized as the University of Toronto Library Automation Systems (UTLAS); and in 1973 the on-line Catalogue Support System (CATSS) was inaugurated, with twelve users in Ontario and Quebec. This system of automated catalogue support had the effect of permitting, and therefore willy-nilly encouraging, groups of libraries to jointly become involved in its use. The same pattern had already become apparent in the United States, where OCLC, despite its willingness to accept individual libraries as members, "caused" organized groups of libraries to emerge in areas where none had previously existed.

The group of libraries that first took advantage of the UTLAS cataloguing system was UNICAT/TELECAT, an organization supported by both the Ontario Universities' Library Co-operative System (OULCS) and the Conference of Rectors and Principals of the Quebec Universities. The uniqueness of an inter-provincial organization devoted to library co-operation did not in any way hinder this consortium; its ambitious programme was quickly translated from plans into action. By 1974 OULCS was involved in co-operation on serials, subject authorities, maps, direct inter-university borrowing, and, of course, use of UTLAS. In its use of UTLAS' CATSS, this group led the way in its adoption of policies which provided for, among other things, the compilation of a union catalogue as a by-product of the cataloguing activities of the individual institutions, and the development of and adherence to bibliographic standards, which are essential to the concept of a union catalogue and which help to distinguish between this group's efforts and the growth-oriented, laissez-faire policies of similar groups in the U.S.A.

A second and rather different organization is the AAU/BNA system. The Association of Atlantic Universities is the sponsoring body; computer programs have been leased from Blackwell North America, the American book wholesaler and library service centre. The AAU/BNA system, which uses the computing equipment at the University of New Brunswick at Fredericton, supplies its members with catalogue cards and kits, and also produces the AAU Union Catalogue on COM. While this batch system has operated successfully for the past two years in a "pilot project" mode, some AAU institutions seem to be showing increasing interest in on-line access to large databases, such as those provided by UTLAS.

I would be remiss if I were to leave you without saying something about the British Columbia Union Catalogue (BCUC) project. The project now has twenty-seven members, representing 35 university, college, public, special and government libraries. All of the members are using UTLAS for current cataloguing; all follow the same set of bibliographic standards; all contribute to the provincial union catalogue, which appears on COM-fiche; and 25 of the members have already either closed or actually replaced their old card catalogues. The BCUC Project, which is supported in part by the B.C. Ministry of Education and in part by the member institutions, is actively pursuing the shared use of its members' authority files, and is currently studying alternatives to the existing services it offers its members. One aim is to supply some services using computer facilities with British Columbia.

I could continue, and perhaps I should, for I have given insufficient detail on the Canadian Union Catalogue report; I haven't even mentioned the CERBIQ report on a bibliographic centre for Quebec, or Saskatchewan's plans for automating public library services, or any of a multitude of efforts that are so well categorized and summarized in the NLC Networks Office's *Overview of Computerized Library Networking in Canada*.

For all these omissions I can only apologize and hope that despite the conciseness of this brief overview, the general direction we are taking is clear. As I suggested earlier, the foundations are being well designed. We need now to proceed recognising that the house of library automation in Canada is in danger of becoming a ramshackle mansion, lacking even doors to connect the various rooms. It's certainly not too late for an overall design to accommodate the existing structure, nor is it by any means too early.

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September 1979

NATIONAL LIBRARY OF CANADA FIVE-YEAR PLAN

OVERVIEW

by
Hope Clement
Associate National Librarian

I Introduction

In 1977, the National Librarian initiated a review of the role of the National Library which celebrated its 25th Anniversary in 1978. Briefs were submitted by major library and scholarly associations. Meetings were held across the country with library groups. An in-house Review Team submitted a report, based on extensive internal and external input, which contains 109 recommendations, the majority of which are being implemented after review by the National Library Advisory Board. All of this opinion-gathering activity culminated in the National Librarian's Report on The Role of the National Library which has been submitted to the Minister.

In order to propose the implementation of Dr. Sylvestre's recommendations, a five-year plan has been developed. The general principles and recommendations of the report have been turned into concrete program activities. These have been assigned priorities, placed in a logical plan of action and costed. The overview will describe the new program which the National Librarian is recommending and the new or enhanced services which the Library would offer.

The five-year plan extends from the present fiscal year, 1979/80 to 1983/84. Some new activities will be initiated beyond that period, but major developments in the three major areas of the plan will take place, if approved, during the next five years. It is, of course, possible to delay or extend the implementation of the plan and thus push it forward into the future. It must be emphasized that the plan is at present just a proposal which has been submitted to the Minister along with Dr. Sylvestre's report which addresses also policy and organization questions which are not discussed here. The program is not yet approved or funded. We are presenting it to you for your reaction.

The Plan is divided into three areas in order of priority: the bibliographic and communications network; the resources network; and Canadian studies. This does not mean that no action will take place in the third area until the other two are completed, only that more resources will be assigned to the highest priority area so that it develops at a faster rate. In assigning priorities, the following factors were taken into account: external needs, demands and developments in the Canadian library community; economic factors; need to be in a position to take advantage of, and relate to, national and international network developments; work already in progress at the National Library; logical order of implementing activities which are interrelated; number of people to be served and which will benefit; availability of technology and standards. Generally, developments which will assist the Canadian library community and their users as a whole are given priority over services to specialized groups and to researchers who use our services directly at the Library in Ottawa. External services always take priority over internal housekeeping improvements which will assist our staff. What follows are the highlights from a very detailed plan.

II Bibliographic and Communication Network

First priority is the development of the bibliographic and communications network which relates to two areas proposed in the Report of the Canadian Union Catalogue Task Group. Its objective is to ensure national bibliographic control and communication links between Canadian bibliographic centres and libraries, thus making resource sharing possible. It covers the provision of source bibliographic records, the development and promotion of standards, the operation of a national network node using an on-line library management system, and the development of communication links between network nodes and development of an overall network plan and structure.

In this area the National Library already provides bibliographic records for Canadian publications through Canadiana, in print, COM and machine-readable form; distributes authority records on COM; converts and distributes records from other national sources, LC, CONSER and UK; has developed MARC formats for monographs and serials; has established two committees for bibliographic and MARC standards; has made a beginning on retrospective Canadiana; has implemented decentralized Cataloguing-in-Publication (CIP) for English trade monographs; assigns or coordinates the assignment of International Standard Serial Numbers (ISSN) and International Standard Book Numbers (ISBN); has implemented the DOBIS system for cataloguing and catalogue search, and has established a network liaison office and done preliminary work with the Library of Congress on protocols for computer-to-computer links.

The five-year plan proposes first to increase the coverage, level of treatment of materials, and to improve the currency and the output products of the current national bibliography, Canadiana.

AACR2 will be implemented in January 1981, and there will be improved microfiche and hard copy editions of Canadiana with better indexing. Many of the records now included in Canadiana do not receive full bibliographic treatment and this will be rectified. Full descriptive cataloguing, rather than the analytic treatment now provided, will be supplied for federal and provincial government documents which will also receive English and French subject headings and LC and Dewey classification. The same treatment is planned for records for Canadian Theses on Microfiche in 1982/83. Legal deposit will be extended to microforms in 1980/81, and full records for these will be included in Canadiana. As much original publishing is being done in microform, it is very important that this Canadian material be added to the National Library's collections and brought under bibliographic control. Additional audio-visual material and materials resulting from new technology will be added later in the plan.

CIP records are now produced for English-language trade publishers in a decentralized mode by agent libraries. CIP will be extended to federal and provincial official publications, using individual departments or official publishers as cataloguing agents, beginning in 1980/81. Federal departments will use DOBIS to input records. It is hoped that arrangements can be worked out to cover French trade publication.

Canada's input to the International Serials Data System (ISDS) will become comprehensive over the five-year period to cover all Canadian serials, current as well as those which have ceased publication, with the assignment of ISSN's and the supply of machine-readable records to the central data base in Paris. The National Library assigns blocks of ISBN's to English language publishers and will publish a directory of block number assignments and publishers' addresses in 1980/81.

The foregoing covers bibliographic control of current Canadian materials. In the area of retrospective Canadian bibliography, a checklist of Canadian monographs published from 1867 to 1900, will be issued on microfiche over three years from 1979/80 to 1981/82, and a printed bibliography will be issued at the conclusion of the Canadian Institute for Historical Microreproductions Project, at which time many of the records will be upgraded by comparison with the actual physical items. All records for retrospective bibliography are added to the machine-readable files and will be available on the MARC Record Distribution Service (MRDS) in the future beginning in 1982/83. Priorities for other periods of retrospective bibliography are 1751-1866 with data preparation beginning in 1981/82, followed by 1901-1949, beginning in 1983/84. It is hoped eventually to complete retrospective bibliography for all materials to the beginning of Canadiana in 1950, and then to complete coverage for forms of material not completely covered in Canadiana.

In addition to Canadian bibliographic data, the MARC Record Distribution Service will increase the coverage available, to be supplied in machine-readable or unit card form as follows: CAN/MARC Authorities (machine-readable form only, 1979/80, in addition to the current microfiche service); INTERMARC from French and Australian MARC 1980/81; Canadian Government documents and ISDS serial records 1981/82. At later periods records for other types of materials such as maps and audio-visual items, both Canadian and from the Library of Congress, will be added as requested by users.

Networks plans include the establishment of centres of authentication to verify names, subject headings and access portions of records. This will be done in a decentralized fashion with the National Library taking particular responsiblity for Canadian names and for liaison in case of conflict with other national and international bibliographic centres. The centres of authentication concept is at present demonstrated in the CONSER, SHARAF, and Laval subject-heading projects. Other likely decentralized authorization centres are federal and provincial departments for establishment of their own headings and further authentication agreements with Canadian bibliographic centres and other national centres and bibliographic agencies.

In the area of standard development and promotion, MARC communication formats are to be developed for authority records and maps in 1979/80, machine-readable data files and analytics in 1981/82. Work will continue on character sets for non-Roman scripts.

The two Canadian committees on Cataloguing and MARC will be expanded to include specialist consultants in various types of materials, and to provide wider representation as necessary and as resources permit.

DOBIS will be operated as a shared system for federal libraries and as the system for the processing of the National Library's national bibliographic and internal services, beginning in 1979/80. It will be further developed to cover acquisitions, circulation and serials control modules in 1981/82, 1982/83, and 1983/84 respectively. As the system supporting the national node of the Canadian network, it will be linked to Canadian and international bibliographic centres.

In the area of network development and promotion the plan proposes an expanded Network Office with an increased budget for planning and project implementation, liaison, consultation with regional networks and consortia, advisory services, workshops, conferences, committees and a technical bulletin, in 1980/81. (The personnel resources in the networks area have already been strengthened with the immediate secondment of Cynthia Durance and Ed Buchinski as well as Roddy Duchesne and the staff of the existing Networks Office to a Library Network Project.) The plan also proposes funds to undertake applied research and general network studies, beginning in 1980/81 and in future technology, e.g. Telidon, and user need studies in 1981/82. The National Library would act as a focal point for the UNESCO General Information Programme and for the UNESCO Program of Information in the Social Sciences, with the establishment of an advisory committee and a secretariat in 1980/81 to ensure effective Canadian input into UNESCO plans and programs. As well the National Library, on behalf of Canadian libraries, would participate in the development of a national information policy and plan.

An essential item in the development of a Canadian library network is the development and operation of computer links between national, regional, provincial and international centres. This forms the backbone of a cooperative and decentralized bibliographic and resource network. The development of techniques and protocols to accomplish this are scheduled for 1980/81, with links to other systems beginning in 1981/82. The National Library would like to establish links between its DOBIS installation and the DOBIS installation at Centennial College in Toronto in 1980/81, and then with systems and consortia as they already exist or evolve, e.g. UTLAS, BCUC, and other provincial, regional or type of library systems. In addition, a link would be established to LC and a link for location and document delivery purposes with CAN/OLE. Future links might also be with other information retrieval systems, with Euronet and with individual library systems and mini-systems, if requested, in order to make the national bibliographic data base available to them. The time scale is uncertain in this area because the rate at which new systems will evolve is unknown, but the plan proposes the development of several links to other systems per year. The plan will request funds for research and development to establish the links, and it assumes cost sharing on the actual operation of the links between the federal mode and other systems based on respective use.

To sum up, in the bibliographic and communications network area the plan proposes complete in-depth coverage and treatment of bibliographic records for Canadian materials, current and retrospective; more decentralized shared record creation and authentication of records; continued work on Canadian bibliographic, MARC and computer protocol standards, with increased mechanisms for liaison with Canadian libraries and for Canadian input into international programs; provision of bibliographic records from other countries according to priority needs of Canadian libraries; operation of DOBIS for federal libraries and with direct links to other Canadian systems; and a stronger network planning, consultation and liaison function supported by research and development funds for Canadian network projects. The concept behind this plan is a shared and decentralized Canadian library network with international links and with links between library systems and information retrieval systems.

III Resources Networks

The second overall priority as regards the matter of timing is the resource network which depends on the implementation of a bibliographic network for its efficient operation.

The objective of the resource network is a satisfactory level of coverage within the country of library materials needed by Canadians; the maintenance of resource collections at an adequate level and the effective sharing of resources among libraries, making the best use of the funds available and eliminating unproductive duplication. The resources networks plans of the National Library include a lending centre for periodicals and official publications, a clearinghouse for shadow literature, identification and funding of back-up resource libraries, improved level of service in the Canadian Book Exchange Centre and the Multilingual Biblioservice, and the establishment of a program for the visually and physically handicapped.

In this area the National Library already maintains union catalogues and publishes union lists; operates a location service and lends from its own collections. The National Library also carries out resource surveys of Canadian library collections and operates the Canadian Book Exchange for redistribution of library materials and the Multilingual Biblioservice, but at a restricted level.

The first priority in the plan is for the establishment of a national lending centre for periodicals to be expanded a year later to government publications. It is assumed that such a periodical lending centre would be a centre of first resort, stocked to fill from 70 to 80% of requests. It would be backed up by a network of supporting resource libraries in specialized fields and the lending centre would have contractual arrangements with these libraries to perform this service. The lending centre would be operated separately from the bibliogrpahic and research areas of the National Library and would be set up to provide fast photocopying and lending services with a minimum of overhead. It cannot be accommodated in the present National Library building which, in any case, is not suited to what is essentially a factory-type operation set up on an assembly line basis. Our concept of a lending centre closely resembles that of Boston Spa but, of course, on a smaller scale.

The planning and feasibility study for the centre is scheduled for 1980/81, with implementation of operations for periodicals in 1981/82. In this same year, a document delivery study would be undertaken to examine the best means for document delivery in a country of the geographical extent of Canada, e.g. air freight, truck services, facsimile transmission, courier, etc. In 1982/83, government documents would be added to the centre and the Library's large collections of Canadian, foreign and international documents would be used as a basis, but re-organized for lending rather than research services. In addition, the existing collections would be increased by other selected international exchanges.

In 1982/83, a clearinghouse for Canadian shadow literature would be initiated. This program may be moved forward depending on the passing of a freedom of information bill for access to government information. Such a clearinghouse would begin by making available government technical and research reports in photocopy and/or microfiche and would be gradually expanded to cover unpublished reports from other Canadian sources and, as well, semi-published municipal documents which are issued in very limited numbers. Access to such a collection would be via an information retrieval system, e.g. CAN/OLE, with a direct document delivery link to the lending centre.

The five-year plan does not include a lending centre for monographs. The National Library will continue to lend monographs from its own reference collections and would make arrangements with back-up resource libraries also to lend monographs. A lending centre for monographs would only be established following a feasibility study which demonstrated that such a centre was indeed the most effective way of sharing these materials. Such a study is not envisaged in the period of the five-year plan.

The lending centre would operate in close liaison with the lending operations of CISTI for scientific and technical materials and thus provide a complementary program for the social sciences and the humanities. A charge would be levied for loans or photocopies based on the direct cost of providing the service. Back-up libraries would be reimbursed for loans made on behalf of the lending centre. Thus charges would be based on search, retrieval, photoduplication, telefacsimile, distribution and payment to back-up libraries, but would not include overheads or costs of collection development and maintenance. The centre would aim at 80% effectiveness for serial requests in the social sciences and the humanities in 1983/84.

The operations of the lending centre would be backed up by union catalogues and union lists. The nature of these would gradually change as a result of the lending centre operations and of computer links with other library systems. For example, if a fast lending service is available for all most frequently requested serials, union lists may be able to concentrate on more specialized subject areas. However, the National

Library plans to produce a comprehensive union list in the social sciences and the humanities in 1980/81, and input of this material into DOBIS is progressing well. This list is planned for mounting on CAN/OLE in 1981/82.

The Union Catalogue of Books will be mounted on DOBIS for all current accessions beginning in 1980/81, with terminals or computer links used to access materials in other systems. A feasibility study on the future of the existing Union Card Catalogue is planned for 1983/84, to determine whether it should be converted or partially converted to machine-readable form, published on microfiche, digitized as a card image only, with searchable access points (a new technology now being investigated by the Library of Congress) or left as it is. By 1983/84, use statistics will give a clearer picture of the effect of on-line systems and the lending centre on the old Union Catalogue and thus indicate its relative importance and the cost-benefit of making it more directly available. It will, of course, continue to be searched as now at the National Library, but will naturally be less used when current material is no longer added.

An essential element in the development of a resource network is the identification and appointment of back-up national resource libraries and the assurance of adequate funding to maintain these collections. The plan proposes federal funding of approximately $1.5 million annually in grants to maintain resource back-up collections across the country. Such funds would not necessarily be administered by the National Library, but the Library would play a role in the development of a funding policy (1980/81) and in the identification of resource libraries. National resource libraries in the federal government would be identified in 1980/81, for example, the Department of Agriculture and the National Gallery, and other resource libraries in 1981/82. Agreements with these libraries to act as back-up to the lending centre would be negotiated and in 1982/83 a referral network is planned so that these libraries would act as reference and research back-up. The National Library would continue to support the conduct on contract of resources surveys of Canadian collections to identify strengths and weaknesses and would itself maintain a few special resource collections, outside the area of Canadian studies, to fill gaps not covered by research libraries elsewhere, for example, the performing arts collection, to be adequately supported in 1981/82, and its other special collections, such as the Vanier Collection on the Family and the Hebraica, Philatelic, Dutch, History of the Book and Ukrainica collections. most of these were established, or are supported by, gifts.

The Canadian Book Exchange Centre would receive extra funding in 1982/83 to provide a more adequate service able to handle all materials which libraries wish to dispose of and to provide more listing of materials available, as well as to fill individual desiderata requests, thus achieving a more rapid turn-around and distribution of materials. The CBEC would, of course, be a prime source of back files for the periodical lending centre.

To put the service of the Multibiblioservice on an adequate level to meet the demands made upon it, it is proposed to increase resources to adequately support all presently covered languages in 1981/82 and to add

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new languages in 1982/83 and 1983/84. This service now cannot keep up with the demands made on it.

It is proposed that a program for the physically and visually handicapped be established in 1980/81, the International Year for the Handicapped, covering a union catalogue of materials for the handicapped, advisory services and development, and promotion of standards. This will be based on planning already done at the National Library from 1976 to March 1979.

To sum up, the plan proposes a resource network comprised of a national lending centre for periodicals and government documents, and a clearinghouse for shadow literature, backed up by a network of resource libraries across the country supported by collection development grants; continuing resources surveys and some special resource collections at the National Library; expanded and adequate services to meet demands in the areas of the Canadian Book exchange and Multilingual Biblioservice, as well as a program to support library service for the handicapped.

IV Canadian Studies and Conservation

Canadian studies is really a part of the resource network, but it is given a separate treatment and priority because it comprises a basic part of the National Library's mandate with the objective of the conservation and preservation of the literary and cultural heritage of Canada and the dissemination and promotion of information on Canada, at home and abroad.

Canadian studies is given the third overall priority because it is a long-range activity especially as concerns the collection of retrospective Canadiana, and because the National Library is already doing a great deal in this area. The expansion of services which support all the country's libraries in their direct service to their users are given higher priority, i.e. the bibliographic and resource network activities, than are services to researchers using the National Library in Ottawa.

The Canadian studies area covers the expansion and development of in-depth Canadiana collections including the Canadian imprint, current and retrospective, and supplementary materials; the expansion and development of in-depth reference, referral and advisory services, including Canadian bibliography; and a program for the conservation and preservation of Canadian library materials.

In this area the National Library already has a substantial Canadiana collection supported by the legal deposit of monographs, serials, sound recording and educational kits and provides reference services to researchers and, as a back-up, to libraries. Materials from its collections are now available on loan to other libraries.

The plan proposes first to increase the coverage of its Canadiana materials and thus their availabilty to the country. It should be noted that bibliographic control of all Canadian materials, both for present and expanded coverage, has already been described under the section on the bibliographic networks and thus is given first priority.

The legal deposit would be expanded in 1980/81 to cover materials in microform. As much original publishing is done in this format, the comprehensive collection of this material is becoming urgent. The legal deposit of newspapers is not proposed centrally (the National Library already has the major newspaper collection in the country) but rather we hope in 1980/81 to work out a scheme for decentralized deposit of newspapers, in arrangement with the provinces, to cover local and regional papers. (Newspapers of major cities are, of course, collected in the National Library.) Legal deposit would be extended to maps in 1983/84 and to other materials in the newer audio-visual fields beyond that date.

It is planned to put the Canadian Theses on Microfiche service on a firm basis with competitive prices, adequate turn-around time and up-to-date publication of annual lists, this year, 1979/80. This service now covers nearly all Canadian universities.

In the area of native peoples' collections, the Library has been given the collection of the disbanded Indian Rights Commission, has purchased several other collections and is seeking funds in 1979/80 to adequately maintain and service these research materials.

In the area of Canadian materials not subject to legal deposit, the Library will make a concentrated attempt to fill in the gaps in its retrospective Canadiana collection: by weeding existing uncatalogued collections and incorporating required items, in 1979/80 - 1980/81; by studying our collections in depth to prepare desiderata lists, in 1980/81 - 1982/83. It is proposed to increase the book budget for purchase of retrospective Canadian imprints and foreign imprints on Canadian topics in all five years of the plan by 15% annually to cover inflation and by $100,000 per year during the three years from 1981/82 to 1983/84. During 1980/81 the area of Canadian studies is to be more clearly defined and the National Library's acquisition policy updated to reflect a concentration on subsidiary materials (in addition to the Canadian imprint and to materials directly relating or referring to Canada) which support Canadian studies, e.g. foreign material on comparative government of federal states, English and French history, immigration to the New World, bilingualism and other topics of Canadian importance and interest. Thus our foreign acquisitions will be concentrated on the Canadian studies support area.

In connection with Canadian-produced materials, not subject to legal deposit, the Library would undertake more active acquisition of literary and music manuscripts beginning in 1982/83, would increase its coverage of annual reports of businesses and societies in 1982/83, and of municipal documents in 1983/84. A clearinghouse for shadow literature (referred to under resource networks) is proposed for 1982/83 or earlier.

In the area of more in-depth reference, referral and advisory services, the Library proposes to add Canadian subject specialists to do collection building and assist researchers. Those proposed are in the following areas: native peoples, 1979/80; social studies (political science, sociology, anthropology, economics, business, public administration), 1981/82; performing arts, 1981/82; Canadian history and literature, 1982/83; and multicultural studies, 1983/84. These subject specialists will assist in the promotion of Canadian bibliography. DOBIS will be able to select and produce special bibliographies on Canadian topics on demand in 1981/82 and select the Canadian input to international data bases. A clearinghouse of Canadian bibliographies in progress, basically a list of unpublished bibliographic research, is proposed for 1982/83, and some funds to support the development of Canadian subject bibliographies for 1983/84.

The computer-based reference searches which the National Library supports on CAN/OLE (we now support CAN/MARC and as well a number of CAN/SDI data bases) will be expanded especially in the social sciences fields, in addition to the Canadian Union List of Periodicals in the Social Sciences and the Humanities, and Canadian shadow literature already referred to for 1981/82 and 1982/83 respectively, by one data base per year from 1980/81 to 1983/84, including a guide to machine-readable data bases.

It is planned to develop a cooperative reference referral network in subject specialties beginning with federal libraries in 1981/82, and adding other back-up libraries in 1982/83.

In order to keep in touch with our Canadian users, some small expansion is proposed in public relations programs for 1981/82, with increased representation at regional conferences and increased frequency of the National Library News. Travelling displays on Canadian books and topics are proposed for 1982/83, and slide/sound productions on National Library services for 1983/84.

Improved access to National Library collections, a chronic problem due to lack of staff and the lower priority always assigned to in-house projects as opposed to external services, will receive a small boost beginning in 1982/83, with the retrospective conversion of our in-house catalogues to DOBIS, and some push towards cataloguing of collection backlog would be made beginning in 1983/84.

Finally, an essential element in the collection and preservation of the national heritage is the conservation itself of library materials. The National Library proposes to begin development of a national conservation plan in 1979/80, including training programs and advisory services. A micrographic specialist is proposed to 1980/81, and funds for preservation microfilming in 1981/82, especially of newspapers. A registry of Canadian microform masters is proposed for 1981/82.

In the area of deacidification, the National Library will begin on Canadiana in its own collections in 1980/81, and proceed to unique Canadiana in other collections in 1983/84. In addition, it will attempt to promote regional deacidification centres.

To summarize the proposals in Canadian studies, a specialized area of the resource network, the National Library plans to expand coverage to additional forms of Canadian library materials; to fill in gaps in its collections of the Canadian imprint; and to concentrate its acquisitions, beyond that of Canadiana, itself to materials supporting in-depth Canadian studies. Subject specialists in Canadian fields will be added, a reference referral network established and Canadian bibliography promoted. A network conservation program will be implemented.

V Conclusion

This is a rapid overview of a very detailed five-year plan which has been drawn up for the National Library. It is based on a concept of a decentralized library network for Canada, with sharing of bibliographic records and of the work of creating them and also with sharing of library materials and expertise, that is the resource and reference referral network. Some basic services will be provided centrally, like the provision of standard national bibliographic source records and of photocopies of periodical articles. The National Library will also contract with other libraries for record creation and authentication and for back-up of lending and referral services. The plan proposes federal funding for maintaining national resource collections, for network research and development and for the creation of network links.

We are giving you a preview of this plan so that we can get your reaction on its content and on its priorities. This is the most detailed and extensive planning venture which the National Library has ever undertaken. It is our best estimate of what is needed to implement a national library network for Canada that will enable libraries to continue to function adequately at a time of financial restraints and to provide Canadians with the information they require. It should not be our plan, it should be yours, as we exist only to serve you, the libraries and researchers. Please react, tell us where we are wrong, where we are right, and then help us to fight for the means to build a sound network in Canada. We strongly need your support if this plan is to become a reality.

Concept of a Canadian Library Network On which Five-year Plan is Based

Objectives:

1) Sharing of library collections, bibliographic records and specialist expertise to meet users' needs.

2) Economy, the best use of scarce resources (human, financial) by the elimination of unnecessary duplication in collections, storage, and services and by cost-sharing.

3) Preservation of the national cultural heritage and the promotion of information on Canada, at home and abroad.

4) Conservation of valuable library materials for the future.

Basic Philosophy

The network is to be built using, wherever possible, components already in place, and building on existing strengths (collections, systems, specialist expertise). It is to be as decentralized as possible, but based on a common, agreed on policy and plan. Services which can most effectively be provided centrally are to be so provided. Compatibility at higher system levels should still permit individual variations at local levels. All resources in the network should be available to all who require them.

Overall Functions:

1) Resource sharing (interlibrary loans, locations, union catalogues and lists).

2) Referral and advisory services.

3) Information retrieval and bibliography.

4) Shared cataloguing including authority control and production of bibliographic products as required, cards, tapes, microform and printed lists, and catalogues.

5) A cooperative national bibliographic data base to support the previous functions, as well as library housekeeping operations, such as acquisitions, circulation, services control.

6) Library management information and statistics.

Overall Requirements:

1. Standards; bibliographic, MARC, computer protocol.
2. Bilingual access.
3. Multilibrary input and access.
4. Input to and from international systems.
5. Links between Canadian systems.

Network Levels:

1. National and central services.
2. Regional, provincial and consortium networks.
3. Local libraries.

National/central and regional/provincial/consortium levels will be joined by computer-to-computer links.

Regional/provincial/consortium levels and local libraries will generally be joined by terminal or mini-computer links.

Functions of the Three Levels:

A. National/Central Level. (Some functions and central services may be carried out by agreement or contract by other network levels.)

1) Network planning and liaison: central secretariat and network committees; advisory services; conferences, workshops, training; network bulletins, newsletters, manuals.

2) Development and promotion of standards.

3) National data base authentication (Centres of authentication to be chosen from existing centres of expertise).

4) Provision of bibliographic records for current and retrospective Canadian materials; provision of records, in the Canadian standard, from foreign sources.

5) Funding for research and development and network studies.

6) Development of computer-to-computer links.

7) Provision of central lending and location services.

8) Collection development funding for resource and back-up libraries.

9) Conservation and preservation plan and services.

Note: These functions are included in the National Library's Five-Year Plan.

B. Regional/Provincial/Consortium Level

1) Secretariat and liaison with levels A and C.

2) Shared cataloguing and other shared systems, housekeeping services and products.

3) Union catalogues and location.

4) Resource sharing, document delivery.

5) Information retrieval.

6) Provision by agreement or contract of central services to network as a whole.

7) R & D, studies.

8) Operation of links to other levels.

9) Management information.

10) More specific functions to be added to meet requirements of the particular network group. (It is hoped CARL will define the requirements of its members for network functions.)

C. Local Level

1) Operation of in-house cataloguing, circulation, acquisitions, serials control functions using level B in many cases.

2) Provision of direct services to users as required by clientele.

3) Contribution of resources for sharing (records, collections, expertise) to levels A and B as required.

NATIONAL LIBRARY OF CANADA

Five-Year Plan, 1979/80 to 1983/84

General Priorities

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK

II RESOURCES NETWORK

III CANADIAN STUDIES AND CONSERVATION

I. BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK

Year	1979/80	1980/81	1981/82	1982/83	1983/84
1. Canadiana		Implementation of AACR2.	Improve currency of content.	Full descriptive cataloguing, classification and subject headings for Canadian theses.	More coverage of municipal documents, full cataloguing, classification and subject headings.
		Improved COM and hard copy products, better indexing.			
		Full descriptive cataloguing, classification and subject headings for federal and provincial government documents.			
		Extend coverage to microforms: full cataloguing, classification and subject headings.		Extend coverage to government maps, full cataloguing.	Extend coverage to non-government maps, full cataloguing.
2. CIP		Expand coverage to federal government departments (on DOBIS).	Expand coverage to additional federal government departments at a projected rate of 10 per year.	→	→
		Begin coverage of provincial government publications.	Expand coverage of provincial government publications.	→	→
			Expand coverage to French language trade publications.		

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
3. ISDS	Increase coverage to all Canadian serials, current and retrospective. (Over 5 years)	→ Supply machine-readable records to Paris.	→	→	→
4. ISBN		Publish directory of block number assignments and Canadian publishers' addresses.			
5. Retrospective Canadiana	Publish checklist of Canadian monographs, 1867-1900, on microfiche. (Over 3 year period)	→	→ Begin data preparation for Canadian monographs, 1751-1866.	Retrospective Canadiana records available on MRDS.	Begin data preparation for Canadiana monographs, 1900-1949.
6. MARC Record Distribution Service	Addition of CAN/MARC authority records	Addition of INTERMARC (France) records, and AUSMARC (Australia) records.	Addition of: CAN/MARC government document records; ISDS serial records.	UNIMARC implementation. Addition of CAN/MARC records for maps.	

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
6. MARC Record Distribution Services (cont'd)				Records for Canadiana monographs 1751-1900 added. Addition of LC MARC records for music, maps, films, etc.	→
7. Networks	Library Network Project.	→			
	Continuation of existing centres of authentication: SHARAF, LAVAL/Répertoire, CONSER.	Establishment of new centres of authentication: CIP federal and provincial government agencies.	Establishment of new centres of authentication: Other Canadian bibliographic centres.		
		Federal government Library network on DOBIS.	→	→	→
		Applied research and general networks studies, studies on future technology.	→	→	

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
7. Networks (cont'd)		Participation in development of national information policy and a national library information system.	User needs studies.		
		UNESCO General Information Programme and UNESCO Programme of Information in the Social Sciences: Advisory Committee and Secretariat.			
		Development of techniques and protocols for computer to computer links, CICS to CICS links.	Implementation of links between NL and other library systems and consortia, regional, provincial, national and international, also with LC and CAN/OLE.	→	→

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
8. Standards	Development of MARC communications format for authority records, and maps.		Development of MARC communications format for machine-readable data files and analytics. Implementation of changes resulting from UNIMARC.	Development of MARC communications format for films.	
		Development of character sets for Indigenous and non-Roman scripts.	→	→	→
		Expansion of Canadian Committee on Cataloguing and Canadian Committee on MARC to include specialists and consortia representatives.	→		

I BIBLIOGRAPHIC AND COMMUNICATIONS NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
9. DOBIS	Shared cataloguing and searching, federal government libraries including NL, CISTI and Library of Parliament.	Shared cataloguing and searching: addition of up to 10 more libraries per year.	→ Implementation of Acquisitions module.	→ Implementation of Circulation module.	→ Implementation of Serials Control module.

II RESOURCES NETWORK

Year	1979/80	1980/81	1981/82	1982/83	1983/84
1. Lending Centre	Background studies	Planning and feasibility study.	Implementation of operations for periodicals. Document delivery study.	Implementation of operations for Canadian, foreign and international official publications. Increased exchanges of foreign documents. Establishment of a clearinghouse for Canadian government shadow literature (to be made available in photocopy or on microfiche).	Goal of 80%, effectiveness for serial requests in the social sciences and humanities. Extension of coverage of shadow literature to semi-published municipal documents and material from other Canadian sources. Access through CAN/OLE.
2. Union Catalogues and Lists		Publication of union list in the social sciences and humanities. Begin current accessions to Union Catalogue of books mounted on DOBIS.	Mounting of union list in the social sciences and humanities on CAN/OLE. →	→	→ Feasibility study on the future of the manual union catalogue.

II RESCURCES NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
3. Resource Collections	Continuation of selected resources surveys of Canadian collections.	Development of funding policy plan ($1.5 million annually in grants). Identification of federal government resource libraries.	Identification of other national resource libraries. Implementation of ILL resource library back-up system. Additional support to performing arts collections.	Implementation of reference and research back-up system.	→
4. Canadian Book Exchange Centre				Improved service: faster turn-around, more lists, increased volume of material received and distributed.	
5. Multilingual biblioservice			Additional support for existing languages.	New languages added, support for existing languages maintained.	→

II RESOURCES NETWORK (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
6. Program for the Physically and Visually Handicapped		Initiate program of Union catalogue of materials for the handicapped.	Advisory services on materials and services to the handicapped.	Development and promotion of standards.	

III CANADIAN STUDIES

Year	1979/80	1980/81	1981/82	1982/83	1983/84
1. Legal Deposit		Extend to microforms. Decentralized system for the deposit of local and regional newspapers to be implemented through arrangement with the provinces.		Acquire Canadian federal and provincial government maps through special agreements.	Extend to maps.
2. Canadian Theses on Microfiche Service	Put program on a firm basis: improved turn-around, competitive prices, up-to-date Canadian theses lists.				
3. Native Peoples	Seek funding to maintain and service existing research materials.				

III CANADIAN STUDIES (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
4. Canadian Collections	Catalogue all Canadian material presently in uncatalogued collections.	→	→	→	→
		Study Canadiana holdings, identify gaps, and prepare desiderata lists.			
		Update NL acquisitions policy on Canadiana and supporting materials for Canadian studies.	→	→	→
	Increase budget for the purchase of Canadian and Canadian-related materials by 15% annually (inflation).	→	→	→	→
			$100,000 increase in book budget (each year for 3 years).	→	→
				Establish clearing-house for shadow literature (see Resources Networks).	
				Increase coverage of annual reports of Canadian businesses and societies.	Increase coverage of municipal documents.

III CANADIAN STUDIES (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
5. Literary and Music Manuscripts				Expand acquisition of literary and music manuscripts.	→
6. Reference, Referral and Advisory Services	Add subject specialist: Native Peoples.		Add subject specialists: social studies, performing arts.	Add Canadian history and literature subject specialist.	Add specialist in multicultural studies.
			Production of specialized bibliographies on Canadian topics using DOBIS.		Increased funding to support the creation of Canadian subject bibligraphies.
				Establishment of a clearinghouse of Canadian bibliographies in progress.	
		Addition of Canadian data bases (one a year) in the humanities and social sciences to CAN/OLE, in addition to the union list and shadow literature described in Resources Network.	→	→	

III CANADIAN STUDIES (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
6. Reference, Referral and Advisory Services (cont'd)			Development of cooperative reference network: federal libraries.	Expansion of reference and referral network to other back-up libraries.	
7. Public Relations			Increased NL representation at regional conferences. Increased frequency of NL News.	Travelling displays on Canadian books and topics.	Slide/sound production on NL services.
8. Improved Access to NL Collections.				Retrospective conversion of in-house catalogues to DOBIS. COM catalogues.	Incrased cataloguing of backlog.

III CANADIAN STUDIES (cont'd)

Year	1979/80	1980/81	1981/82	1982/83	1983/84
9. Conservation and Preservation	Preparation of a national conservation plan (training programs and advisory services).	Addition of a micrographic specialist.	Initiation of a preservation microfilming program: mainly newspapers. Establishment of a registry of Canadian microform masters.		
		Initiation of deacidification program: Canadiana in NL collections.	→	→	Extension of deacidification program to unique Canadiana in other collections, and other rare materials.

WHAT DO CARL LIBRARIES NEED OR WANT FROM A BIBLIOGRAPHIC RESOURCE SHARING NETWORK?

by
Guy Cloutier
Bibliothécaire-en-chef
Université de Sherbrooke

I was given the task, which is not an easy one for me, to cogitate about what we, as CARL libraries expect from a bibliographic network. In doing so, I must frankly tell you that I came up with more questions than transparent solutions, namely questions dealing with objectives, library cooperation, library networking and resource sharing in the Canadian academic and research libraries context. The reading and little investigating I did, did not provide me with any ready-made answers except in very general terms; I suggest that these are fundamental issues that we have to resolve between ourselves and on which we must reach a consensus.

Goals and Objectives

The first question deals with goals and objectives. Before we can even try to outline what we as a group of research libraries require from a library resource sharing network we should first of all have a look at our institutional goals and objectives and, secondly, compare them to see if as a group there is enough compatibility to affirm that CARL, as such, is a network in the broad sense of the word, and to verify if CARL can be defined as an organization to achieve a variety of resource sharing or cooperative objectives. Allow me to quote from K. Leon Montgomery's paper presented at the last Pittsburg Conference:

> "Relationships among organizations exchanging library data, material, and services may be categorized along the following dimensions: resource system, bibliographic system, communications system and expectations."

But most important of all:

> "Symmetrical relationships then are achieved when the stated goals and objectives for each of the participating libraries and the network are similar with respect to each of these dimensions."

Is there between CARL libraries similarity or compatibility of goals and objectives? I have to assume that, in fact, we are all trying to achieve the same thing as individual service organizations, and that is - to provide access to library or information materials for our users in a cost effective way. I also have to assume that, as a group of cooperating institutions, we are pursuing the same goal but at a higher level and with strong implications in terms of cooperation and resource sharing. The creation of CARL is significant in these respects, we could probably say that it is because there was a common feeling that a uniting structure was needed among research libraries for the main purpose of organizing library cooperation and resource sharing, in order to increase service to research libraries users, that CARL was created.

CARL libraries are already involved in cooperation, resource sharing, networking in various ways and at various levels with varying degree of satisfaction and frustration, but all of it in a somewhat disorganized way. Let us only think of the frustration resulting from the cost and delays of interlibrary loan, the difficulty if not the impossibility of any attempt to coordinate collections at a national level, the problems, conflicts, costs, that some of us are experiencing in our participation in some of the actual networks.

It seems to me that we will be experiencing the same problems and frustrations as long as we will not dispose of the appropriate tools to achieve the common goals that we have not yet stated, the tool being a network (in terms of a resource, a bibliographic and a communications network) involving all of CARL members, and the goals being library cooperation and resource sharing. We expect "Computers and communications technology to make any of the goals and objectives of library cooperation achievable via library networks" (K. Leon Montgomery).

Therefore the first, or a priori requirement, is addressed to ourselves and that is that CARL produces a common statement of goals and objectives. We have to reach a consensus among ourselves as to what levels of cooperation and resource sharing would we be willing to engage in. What resources are we willing to share, bibliographic data? functions? materials? human and financial resources? expertise? etc. and to what extent? I suggest that it should be part of an action plan to develop such a statement.

Once we know our exact destination, where we are headed for, we should be in a better position to determine the kind of transportation we will prefer.

This brings us to our first and most essential requirement regarding a resource sharing network, and that is that the network closely identifies with our individual, as well as group goals and objectives. We want and need from such a network that, by identifying with our objectives, it helps us give better service to our clientele in a cost effective way, in other words, to give our users fast and easy access to whatever information material is held by any of the participating libraries.

What we need or want from a library resource sharing network can be categorized according to the following dimensions, as they were identified by the Westat report:

Resource system
Bibliographic system
Communications system

Resource System

We want and need a network that will be a resource system such as the

Westat Report defined it

> "A resource system designed to provide guaranteed access to all needed materials through designation and development of libraries or other information facilities which will provide such access, and through coordination or collection development support to ensure that needed materials are collected and made available for users".

The keyword here is resources in terms of library materials. We want a network that will allow us to somehow link existing available resources and which will allow, if required, the establishment of appropriate mechanisms to insure that needed materials will in fact be collected and made available either by existing or participating institutions or by the creation of whatever new facilities might be required or, by attribution of specific responsibilities to some of the members. We want a network that will group together or link the resources (library materials) and the facilities (libraries) which collect and house these resources.

The implications here are considerable. CARL has already manifested intention or made attempts in terms of coordination of collections development. In these respects, we expect the network to provide us with the necessary structure and means to achieve our goals of coordinated collection development. For that purpose we require:

A. Ready access to all holdings, whether monographs or periodicals, of participating libraries to allow coordination and rationalization at both a regional and national level. The network must facilitate implementation of any CARL policies regarding cooperative development and sharing of resources and at the same time be flexible enough to permit the creation and inclusion of new facilities that might be eventually required, such as a periodical centre, lending library, etc. I think that it is our responsibility to decide what, when, where, and how in terms of collections coordination, but it is expected that a network would provide the appropriate structure and means to make these objectives a reality. In brief, the requirement here is for our libraries to have access to a more comprehensive union catalogue in machine readable format.

B. Data or statistical information regarding the location, status and availability of library materials in order to enable us to make whatever analysis or study necessary to develop and implement policies in terms of resource sharing, specialization and coordination of collections development, cooperative acquisitions programs, both at national and regional levels.

C. Interlibray loan system coupled with a fast delivery system. It would be illusory to develop policies, at a network level, of resource-sharing, collections coordination or cooperative acquisitions which will necessarily create an increased interlibrary loan traffic without an efficient and cost-effective interlibrary loan system and delivery system. Resource-sharing activities will have to be supported by interlibrary borrowing which in its turn is completely dependent, in order to be efficient, on an appropriate delivery system.

For reasons of cost-effectiveness and time saving, the interlibrary loan activity should be network supported in order to be able to integrate the following procedures into one operation: identifying and locating the wanted item, knowing its status and referring the request to the lending institution. The actual interlibrary loan system is a failure because the benefits of offering access to other collections are offset by the delays and the costs. The delays are not caused only by delivery problems but mostly by the somewhat archaic and very cumbersome procedures that we actually follow:

1. Providing a bibliographical description that has to be relatively complete and in all points accurate

2. Verifying the completeness and accuracy of the request or identifying the source of reference

3. Telexing all that information to a location system which cannot give you the status of the item

4. Receiving the answer, choosing a location

5. Retelexing the same information to request a loan from the chosen library.

Then you can get a negative answer which will oblige you to send a third telex to another potential lender. Afterwards, you have to wait for the delivery of the item and the bill which will accompany it, and finally the user hates you. If you pass on to him some of the costs involved you end up charging for very inefficient service, which adds insult to injury.

We would most certainly want the network to offer a cost effective solution to the actual problems (mostly delays) of providing the user with ready access to the documents themselves. On-line, network supported, processing of interlibrary loan request might prove more economical and certainly faster than the actual procedure. As for delivery problems, we should probably investigate seriously what the actual commercial delivery systems can offer while waiting for a more sophisticated solution like telefacsimile. It should be possible to have at a national level a delivery sytem similar to IUTS or PEBUQUILL, which would also be cost-effective.

Bibliographic System

The bibliographic part of the network should answer one of our major requirements, that is to "provide a unque authoritative bibliographic description for each item held in guaranteed access, as well as location of such material." (Westat Report)

It is obvious that there is a definite need for a shared cataloguing function if we want to obtain maximum benefits from a networking environment. Furthermore, it is absolutely essential for reasons of cost-effectiveness that we be provided with the capability to integrate the cataloguing function into other library functions. The cataloguing function is the basis, the core of the system; it is a multipurpose function. We would want the information contained in the bibliographic description of an item, once inputted, to serve as a basis for other functions such as catalogue production, processing preparation, interlibrary loan, circulation, information retrieval communication, and so on. What we want and need here is integration. As Williams and Flynn expressed it at the last Pittsburgh conference

> "The true cost-effectiveness of the shared cataloguing function will not be realized until it can be fully integrated into other library functions on an automated basis without restriction and based on established standards known to all and usable by all."

We do not want the network to be more economical only for the cataloguing function, (cataloguing costs are so high that we have a tendency to focus on them), but we require that it be cost-effective, and possibly more economical, in terms of an integrated automated technical services support. Some of us are experiencing the situation of using different facilities for different library functions, for example, CLSI for circulation, UTLAS for cataloguing and catalogue production, CODOC for government publications, a local system for serials control or acquisitions, etc; we have to operate that way because we have no alternative and because we had no other choice than to automate these single functions individually. We most certainly need for reasons of management, efficiency and cost to integrate and deal with only one supplier, the network, whatever its structure may be, centralized or decentralized. In other words integrated total service might be more cost-effective than fragmentation.

There is finally a need for a consensus on standards that would be comprehensible and usable by all of us. We would want the network to provide us with such standards which would permit integrated automation of library functions as well as communications with other similar networks.

Communications System

Resource sharing can be a successful enterprise only if we can dispose of the appropriate technology and communications facilities, which brings us to the third dimension of the network, the communications system which is defined by the Westat Report as follows:

> "A communications system designed to provide online communication of bibliographic data and request for data and services between levels of the network. The systems should facilitate communications among the multiple components of the National Library Network, including provision for educational and training programs for staffs and users."

The communications part of the network is also an essential requirement as far as we are concerned because I truly cannot envisage how we could have resource sharing and shared automated technical services without access to the latest telecommunications technology; we also require that technology to be able to support the heavy demand we would put on it, because fast response time is critical in terms of quality of service and cost-effectiveness.

I am not an expert on communications and I will leave that issue to more competent speakers, except for the few following comments.

First, telecommunications will have a decisive influence on the cost-effectiveness of resource sharing and library networking.

Second, government legislation and policy issues will, in their turn, influence the cost-effectiveness of the technology and communications facilities that we will be requiring. The communications issue being an important political issue between the federal and provincial (at least Quebec) governments, we might encounter here some unexpected and unforeseeable problems.

Our requirements in these matters could be summed up as follows: we want access, at the lowest possible cost, to the latest communications facilities and technology and, for that purpose, we require the assistance and the support of both levels of government. It seems to me that, in future government communications policies, we should demand and obtain a privileged status, mostly because of what we are and what we do.

Conclusion

In summary, what we need or want from a library resource sharing network is an answer (maybe not the answer) to some of the major difficulties that confront us today, namely increased cost which leads to decreasing buying power, and at the same time more pressure from our users for access to more materials and more rapid availability of materials. Instead of relying on local holdings for satisfying most of our users needs, we must turn to reliance on outside materials, in other words give access to library materials at regional and national levels while accepting simultaneously some loss of autonomy.

But we first have to do our own homework and reach a consensus on a statement of goals and objectives we wish to achieve in terms of resource sharing and cooperation. It is our responsibility, not that of the network managers, to state what the user needs and wants.

A national bibliographic resource sharing network, as long as it incorporates the resource, bibliographic, and communications dimensions or components could constitute a potentially efficient way of providing better service to library patrons of CARL libraries. In other words, we expect from a network fast and guaranteed access to whatever library materials are held by participating members and at the same time enough flexibility to respond to specific, local or regional, requirements.

We may require a lot of things from a resource sharing network and a network may in fact be responsive to our requirements, but as far as we are concerned, are we ready to engage in the required behaviour and attitude modifications that will be necessary to achieve consensus on goals and objectives, on standards, on the philosophy of resource sharing? To me, this is where we fail or succeed.

THE FUNCTIONS OF AN INTEGRATED BIBLIOGRAPHIC NETWORK

(Can you get there from here?)

by

Donald B. Simpson
Executive Director
Bibliographical Center for Research
Rocky Mountain Region, Inc.

The definition of a bibliographic network has become more elusive in recent years rather than more clearcut as might be expected. A profession such as librarianship tends to define its teminology to suit its own needs. While this was possible for a time, the massive infusion of technology into the library networking process has meant that librarianship's definition of certain words held in common with other disciplines have had to undergo modification and refinement. This phenomenon was made particularly necessary by the technologists involved with computer science, systems analysis and communications networking, who, in dealing with computers, are accustomed to precision and clear, simple and direct statements. The generalizations of less precise professions are rejected rapidly by these practitioners.

Consequently, earlier definitions of a bibliographic network as illustrated by R.C. Swank's paper at the 1970 Airlie House Conference on Interlibrary Communications and Information Networks (1) have been reexamined and redetailed into highly specific areas of endeavor and, as can be anticipated, into the direct opposite of specificity - simplistic, generalized overusage. Swank's definition summarizes the thoughts of of several others into six main characteristics for an information (i.e., bibliographic) network:

1. having information resources;
2. having readers or users;
3. having schemes for the intellectual organization of documents, or data;
4. having methods for the delivery of resources;
5. having formal organization;
6. having bidirectional telecommunications.

Greater specificity has been obtained in the eight years intervening as can be seen in the variety of definitions contained in the Library of Congress Network Development Office's Network Planning Paper Number 2, A Glossary for Library Networking (2), which was prepared by Dataflow Systems, Inc. Here one sees no definition for a bibliographic or for an information network. Instead, one sees defined the bibliographic service center, the bibliographic utility, the multitype network, the national library network, the network coordinating agency, etc. Network is simply defined as "1) two or more organizations engaged in a common pattern of information exchange through telecommunications links, for some common objectives." and "2) an interconnected or interrelated group of nodes."

Despite the clarity of the definitions contained in the above publication, common usage has incorporated the term "bibliographic network" into the same vocabulary set as "coke", "kleenex", "xerox" and so forth. Therefore, when one hears "network" one cannot be sure what is meant as the additional topical areas cited below related to bibliographic networks will demonstrate. Further points to be considered include types of networks, criteria for network products and services, types of network governance structures, sources of network funding, and the needs of network users.

In the United States in 1979, two discernible networking functions have emerged with identifiable organizations clustering around the two types. The first is the bibliographic utility, a term quite unsatisfactory to some librarians, but reasonably useful to others. The Dataflow Systems paper (2) defines a bibliographic utility as "an organization that maintains online bibliographic data bases, enabling it to offer computer-based support to any interested users ... and provide a standard interface through which bibliographic service centers... may gain access to the ... network." Examples of organizations which are generally thought to fit this definition and carry out this role are OCLC, Inc., Research Libraries Information Network, Washington Library Network, Library of Congress,et al. et al.

The second type of networking function is carried out by the bibliographic service center, which Dataflow Systems defines as "an organization that serves as a broker or distributor of computer-based bibliographic processing services. A service center gains access ... through the facilities of a bibliographic utility..." Examples of this type of organization are the New England Library Information Network (NELINET), the Southeast Library Network (SOLINET), the Bibliographical Center for Research (BCR),et al. et al. For a time it appeared as if these two functional organizational types would remain relatively identifiable. The identification is complicated by the latter acquiring the computer hardware to carry out functional tasks not dissimilar in many respects to the activities of the former. The communications mini-computer of NELINET and the magnetic-tape processing mini-computer of SOLINET (both of which have substantially greater capabilities) are two visible examples. In addition there are instances of the former performing direct user services generally attributed to the latter.

Because the developing bibliographic network process and configuration in the United States is highly dynamic, it remains to be seen whether competition or cooperation will take the dominant position. Following the concept of electronic data processing, one could expect to see a hierarchical-distributed network result in which each of the entities carries out functions serving the needs of the whole. However, struggles over territory, a traditional American business practice, could result in stiff competition. While a reasonable amount of competition can strengthen the ability of the competitors to serve the needs of their users, an all-out life and death struggle could be highly self-defeating in furthering the professional goals of librarianship.

A bibliographic network is often more easily described than defined by using several categories, each of which has a number of possible characteristics. The first of these categories is functional type: cooperative acquisitions, shared cataloguing, interlibrary loan, etc. Another category is organizational type: a single type of library only (e.g. public libraries), more than one type of library, etc. A third category is structural type: multi-state regional, statewide, nationwide, sub-state, local, etc. A fourth category is subject type: medical, legal, etc. A fifth category is governance type: government entity, non-profit private corporation, public corporation, interstate compact, for-profit corporation, etc. By drawing a simple matrix, one can partially define a network in fairly exacting terms and, with caution, effect some limited, but useful, functional comparisons among networks.

Bibliographic networks, can be self-perpetuating in that the need for the network and the support that its participants give it continues indefinitely. Or, it can be self-destructing in that once the stated objectives are achieved, the network goes out of operation. Bibliographic networks can be institutionally-based, in which the basic members are individual libraries, or they can be state-based, where a state's libraries may be represented by the state library agency, which coordinates the network activities within a state. In the latter illustration, the state-based regional or national network tends either to be a loosely-held or tightly-held confederation of statewide networks. Since funding is always a critical question for library networking activities, and the main channel for U.S. Federal funds to libraries is through the state library agency, the state-wide network or state-based regional or national network may be able to deal more easily with funding problems than other types of networks. Of course, there are national and international networks as well. Of particular interest at the moment is the transnational flow of information, an important consideration in international networking.

Networks can offer a number of effective services to their libraries, ranging, for example, from national, regional or statewide distribution of shared cataloguing systems to online searching of information retrieval data bases to document delivery. It is possible for structure to influence the services that a network can offer. Computerized networks' ability to provide information retrieval or shared cataloguing services is irrespective of the size of the network, although the larger the network, the greater the unit savings as a general rule (and like all general rules, there are exceptions). Other services such as the delivery of documents seem to be more successful in smaller network environments because geographical proximity is an asset to this type of service. The real question in structure (i.e., in this case, whether a state-based regional or national network offers more than a statewide network, or vice versa) boils down to whether a statewide network has the depth and breadth of resources, has the ability to establish the best possible vendor contracts, and has the quantity of libraries, in type and size, to support a highly effective network operation. In larger states, the answer may favour the statewide network.

The values of networking are the subject of controversy. Networks have the potential to reduce costs through the economy of scale phenomenon, through resource sharing, and through astute and successful network management. Networks demonstrating economic success (they are self-supporting) tend to price their services on a formula that allows individual libraries to purchase services from the network for less cost than the library would pay by going directly to the vendor, which means that the network must purchase from the vendor for less than the network charges the individual library. The unsubsidized network must capture its overhead recovery in that margin.

Networks have to provide more than just a dollar savings to their participants because people like to have a sense of accomplishment and involvement. Networks must provide leadership in achieving the objectives of their participants. Networks must provide a forum for their members to discuss issues and develop strategies to tackle library problems. Networks must pursue and attain progress on philosophical questions within the profession.

The number of bibliographic networks falling into the patterns cited above have proliferated to a prodigious number. At all levels, in all structural patterns, and with all product and service offerings, there are literally hundreds.

The outstanding example of a largely successful bibliographic network is OCLC, Inc. Beginning as an idea (or dream as the doubters called it) generated by the Librarians' Section of the Ohio College Association in the mid 1960's, OCLC has grown into a living example of computerized bibliographic networking in successful actions, but not without problems.

OCLC, Inc., itself a bibliographic network of the bibliographic utility functional type, contracts with more than twenty bibliographic networks of the bibliographic service-center type. Several compilations have recently catalogued the descriptive categories of the myriad of bibliographic networks. One of the best of these compilations is authored by Susan K. Martin. (3)

The so-called commercial data-base vendors such as Lockheed Retrieval Services, SDC Search Services, Bibliographic Retrieval Services , et al. are bibliographic networks in themselves. Their motivation tends to be a mixture of return on investment (profit) and service.

Above all, a bibliographic network must be concerned with fulfillment of the user needs and of system requirements, because only if these needs are met will there be continuing use of of the networking facilities. The following are 16 major points of bibliographic network concern as viewed by the local libraries using the services:

Ease of Access. In order to use network facilities, many administrative arrangements must be understood and learned. Present user documentation exists in a variety of formats, with different degrees of detail of contents. User assistance may often not be available when needed. Improvement of uniformity, simplicity of operation and standardization in this area is required.

Ease of Use and Operation. Messages from the system to the user and vice versa, should be unambiguous and should indicate what action is required by each party. System actions depending on requests from the user should be well documented and easy to find in the documentation of all concerned.

One-Point Contact. In order to facilitate easy access, efficient operation, and support of the network user, it would be desirable to have a one-point contact, where the user may make arrangements for services, obtain the latest information on types of services, availability and prices, obtain advice and consultation on how to solve operational problems in terms of access procedures, identification, and other details. Here he either would obtain all general purpose documentation required for network operation, or he would learn where and how to obtain special documentation published and distributed elsewhere.

Administrative procedures which are required before access to the network can be granted, must be well documented and simple; completion of the membership or access authorization should not take undue time.

Terminology Problems. The emergence of the new network technology has brought computer technologist, communications engineers, software specialists, and libraries face to face. The technical language used to describe and to specify networks and to measure systems and systems performance reflects this diversity and, as a consequence, the terminology used today is confusing, to say the least. The same word may mean different things in various environments, and the same concept may be known by different names.

Use Assistance. There are several forms of user assistance, which must be provided. Certain information can be conveniently disseminated "on-line", upon user request, at sign-on or sign-off, or at other times. The format and language of such "system messages" must be unambiguous, clear and easily understandable. Many system messages on existing computerized library network systems leave much to be desired in this respect. Types of information which can be handled in this manner may be tutorials regarding systems operation or applications, new product announcements, system changes, documentation changes, or status reports.

While operating, the user should have a capability to know the system status; i.e., the operating conditions of all those parts of the network involved in his operations over which he has control or which affect him. He also should be able to know the service cost so far, or other measurements which are used for accounting purposes such as terminal time. If errors occur, error messages should be provided, if at all possible, with a guide towards solution of the problem.

Other assistance resources should be developed as part of the overall network development. This would mean human professional assistance in systems analysis, training for use of services or general consultation in a speciality available at a network resource center.

Consultation. Human communications are often being neglected in the design of automated information systems. In a national networking capability there is a great need for human intellectual support to all potential users. Highly individualized assistance may be required by a local user in adapting to new programs.

Since consultation by its nature is a human communications process, it is best done in direct person-to-person contact, but various "hot-line" arrangements have been successful where a large geographic area has to be covered.

Orientation and Training. Certain orientation and training activities are required periodically for all echelons of all organizations participating in a national networking effort. These may range from short concise briefings on network objectives, network status, or current problem areas to top-level library managers, to detailed, specific courses in operational aspects such as operation of certain terminals, or operational procedures for staff. Timing of such efforts is of importance and needs to be considered in the overall planning of introduction of services, or the development of new capabilities.

Documentation. Documentation in various forms is required for hardware, software and system services procedures. It is required for system operations, maintenance, orientation and training, as well as for all management functions.

Documentation will also vary in level of detail, from general network-wide policy and procedures statements, to details regarding network access methods, log-in procedures, identification, passwords and emergency procedures, in case the machine starts to smoke.

All publications must meet minimum acceptable standards, as to clarity, content, readability and format.

System-wide standards will also aid both the mobility of users, throughout the network, and of products.

Various types of documentation pertaining to the network are operations and maintenance manuals, policy and procedures manuals, directories, reference manuals and training documentation. Also there will be required some material for general orientation and public relations purposes.

Expertise has shown that documentation problems have been ignored in many cases by management both in the planning process and as part of the operational aspects of networking. Documentation deadlines have been set unrealistically, documentation requirements have been ignored or minimized, and production and distribution problems have been solved on an ad-hoc, post-facto basis, to the detriment of both system user and system manager.

Equipment Design. Equipment design must accommodate all user and system requirements to provide a useful and efficient system, and to provide basic capabilities to the network user. Especially for interactive users, many of the user and system requirements are only approximated by many present-day terminals, which in the case of teletypewriter types, were designed for different purposes, and in a different technological environment.

Development of requirements for low cost, state-of-the-art terminals is being pursued at this time. These efforts are being evaluated as to their impact on libraries and as to the expected reduction of cost for terminals. Positive results of these efforts will enhance networking applications for libraries.

User Feedback. Development of interactive processing has given the user a greater capability to influence an ongoing information handling process. This capability of communication between the user and the system can also be used to elicit responses from the user which can provide valuable information to management, on system usage, system performance, and system utility. Such feedback can also be gained as part of the consultation process, where user replies can be translated into new policies and operational procedures.

Information Control. Users have certain requirements for keeping their files, data and routines restricted to their own use, or they may want to keep usage restricted to persons authorized by them. Users may want to restrict access on a file basis, or on a partial-file basis. Various data-management systems provide such capabilities, but not all systems are flexible enough to accommodate all user requirements.

Reliability. Regarding performance requirements, there is a substantial distinction between an experimental timesharing system which is run by a university computer laboratory and a regional on-line library service that serves hundred, or possibly thousands, of users. In the former case, irregular operation is a nuisance, and while it may inconvenience individuals at times, it can be tolerated, especially if an alternate source for services is not available. A national network must, however, run on a precise schedule and its computer systems must be available when scheduled. Technical performance criteria, such as mean time between failures and mean time to repair, are available for hardware components, and overall systems criteria can be developed for availability and reliability, and must be specified. System reliability is an important ingredient contributing to user confidence; only a trouble-free performance record will insure continuity of use of the system. Another related factor is system stability, which not only insures that the system remains operational within specified operating conditions and operating times, but that the system characteristics remain unaltered. This refers to hardware configuration, software capabilities, and operating procedures.

Product Quality. Hardware quality control has become a specialized branch of information science and has made great progress over the years. Software quality control, in contrast, is still in the developing stage. Only recently has the problem been addressed in a comprehensive and determined way. In a national network formal mechanisms have to be established for classification of software malfunctions, reporting, evaluating and correcting of errors. Efforts are underway to improve software and program structures to permit location of incorrect program parts, and to localize faults. Related to this are system requirements for software documentation and software design, to permit programs to operate on dissimilar machines, with minimum of adjustments. A central facility at the national level for software quality research and development and test may well prove to be beneficial, and may even become necessary for participating segments of the network.

Network Continuity. The network must be so organized that various pieces can be planned and added at various times based on growth requirements. Older-generation machines can be shifted to different system tasks, while new-generation machines take over the tasks of the older machines. Purchase last-generation machines may be obtainable at less cost per operation than newer machines, at least for certain classes of problems. Thus, with increased demand for service both machines can remain in operation.

A network should be able to accommodate addition or removal of equipment of system features without subjecting the users to the major transients associated with system configuration changes. Furthermore, elimination of any user node must not affect the rest of the network, as far as operations at other nodes are concerned. Similarly, organizational and financial provisions must be made to minimize a crippling loss of revenue, if operations are funded that way, and to provide operational compensating mechanisms to continue service.

Network Peformance Criteria. Various echelons of network management would like to be appraised of the "state of well being" of the network at times when major decisions have to be made. No widely recognized general concepts of network status and performance have been developed yet to suit this need. Some existing computerized library systems do measure system response time and system capacity respectively in terms of the time required between completion of a user request and the start of a system reply and total number of users, which can access the system simultaneously, without degrading system response time to unsatifactory levels.

Standards. Interoperation of various components of the network requires standards for description of systems operation and performance, standards for system measurements, and standardized evaluation criteria to permit service evaluation and comparisons.(4)

Once the bibliographic network has successfully met on a continuous basis the above sixteen points, it major functional imperative is to integrate its activities on a multi-function basis. Simply stated this means eliminating the unnecessary redundancy in terminals, centralized and distributed hardware and software, and telecommunications circuitry, while maximizing the use of a single data base as the core for a variety of library functional routines such as cataloguing, circulation, interlibrary loan, and serials control. This, of course, is much more difficult to accomplish than to vocalize. It has not been achieved on the American networking scene as yet.

The close listener will quickly discern that I have scrupulously avoided mentioning two network functions; information retrieval for computerized reference and document delivery. To help explain the use of IR services, I shall refer to the model developed by my own network, BCR, on its program of IR brokerage entitled METRO.

METRO, initiated July 1975 in Colorado through a U.S. office of Education Library Services and Construction Act Title III grant of $25,936, is a dual-function program designed to meet several specific needs of BCR participants. The original grant established information retrieval operations in five Metropolitan Denver libraries that were not previously using computerized reference services. BCR was to be the broker and implementation agency. More than four years later these services are still prospering in the original libraries as well as having expanded to more than 125 additional libraries in twelve states.

The initial grant demonstrates the METRO program's activities in the area of brokerage of the on-site installation (OSI). Here, BCR provides access to several information retrieval vendors. METRO staff can train and equip the library and its staff to engage in computerized reference services. In short, BCR attempts to do all things necessary to establish the library as an operational user of information retrieval services. Various experiments have been carried on in the design and provision of training packages, equipment configurations and pricing structures.

While satisfaction with obtaining these services through BCR generally remains high, BCR recognizes that several of its major objectives were slow to achieve. A major problem was the lack of understanding and credibitlity by the IR vendors to the concept of network brokerage. Most vendors tend to see libraries as individuals rather than as a network group. However, some gains are being made in this regard recently through negotiations with the major system vendors.

Another concern is the continuing problem of network overhead that may necessitate a pricing premium or add-on charge. Vendors have not come to realize that networks can make their lives easier by reducing overhead costs. Consequently, pricing structures are oriented to group discounts based on a ratio of searching volume and user codes. The network that cannot generate volume along this algorithm is forced to place a surcharge to the already outrageously expensive database fees. Vendors need to become aware that pricing structures is critical to their network relationships.

BCR has consistently tried to make this point, but vendors say bring us volume and we will give you low prices. Users say bring us low prices and we will give you volume. Around and around this circular argument we will go our merry way, with the ultimate losers being the people who can benefit from this type of service. Fortunately, BCR volume climbed to a point where sizeable discounts are available to the network participants.

An examination of the potential users for IR services showed BCR that many libraries would never be able to afford the initial costs of this program, or be able to muster the expertise to operate it. Yet, their users were demanding that they have the benefits. BCR then designed a central access feature to allow libraries with minimal staff training to forward searches to a central point for searching. Without detailing the controversy among the proponents of fully, partially and unnegotiated searching, let me merely say that this is a booming success.

BCR has also introduced the self-search mechanism in which fully qualified searchers, but without their own equipment and search tools, can "rent" time on a central machine to perform their own searches. This, too, has been widely utilized.

The other function as yet unmentioned - document delivery - is the most difficult of all to develop, implement and operate. Location of resources, verification of citations and establishment of ILL protocols are all within our grasp today. However, physical movement of the piece remains the major obstacle to a successful program. The U.S. Mails are deplorable; other delivery mechanisms are terribly expensive. The profession much work collectively to solve this problem.

Finally, there are numerous other network functions that I have neglected: union lists generation, Computer-Output-Microform (COM) production, machine readable conversion services, and so forth. It is not advisable for a new network to take on too many functions too soon.

In conclusion, this paper has attempted to outline some of the major concerns to which networking agencies, existing and potential, must pay close attention as well as make the point that an integrated bibliographic network is of vital importance and value to the network's participants. While no clear model emerges, it is the author's hope that the conclusions here will provide a focus for Canadian networking - I hope you can get there from here.

NOTES

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WHY A RESEARCH LIBRARIES NETWORK?

by
Edward E. Shaw, President
The Research Libraries Group, Inc.

I do appreciate your invitation to be with you today. This portion of your agenda is titled "A Decentralized Network: What is it? Goals; Benefits; Problems." From what I have read and heard so far today I suspect an equally accurate descriptions is "Why a Research Library Network?", the question being placed in the context of your consideration of a national library network. I have some thoughts to share with you. I intend that they serve as a catalyst for a dialogue between us and, more importantly, that they serve as a catalyst among yourselves now and into the near term.

Each of us approach any subject with a set of experiences, biases, prejudices and beliefs. In relationship to networks and networking may own prejudices will become clearer - to a greater or lesser degree - during my presentation. But because such beliefs and experiences can shape so fundamentally the meaning of words and phrases, I wish, to begin, to share with you five of my biases.

First, I am, if I may say so, joyously, even unashamedly parochial: I focus upon and am involved with the provision of information required in the scholarly and research processes. My job, my somewhat new profession focuses upon the faculty member and the graduate student via his or her library.

Second, any professional experience is in and of a research university; hence my focus upon faculty and graduate students.

Third, I believe the scholar needs the close, collegial and effective support of a professional and an organization or structure to secure for him or her access to the information required. Historically and currently, this collegial role has been the librarian's and the library's. As you will hear, I believe the roles of the librarian and the library must be written more broadly as we look to the 1980's.

Fourth, I believe in the best of all worlds a university and its library ought to be able to meet its programs goals in such a manner as to maintain its complete independence. I suggest, however, that the best of all worlds no longer exists, if it ever did. The challenge before us is to recognize by commission and with realism that the demands of sophisticated scholarship coupled with substantial and ever growing increases in the quantity and costs of information necessitate broad and effective inter-institutional cooperation on a scale heretofore unsuccessful. There are, simply put, insufficient resources in library and university budgets to maintain the historical fiction of absolute institutional autonomy.

Fifth, the linkages of institutions and thereby the individuals that people those institutions - linkages we refer to as networks - are so important to the academic health of our institutions that we, librarians and university officers, must retain intellectual as well as operational accountability for them.

These then are my biases, my beliefs and they set the context for the following.

It is said that "A man with one watch knows what time it is; a man with two watches is never sure". The library profession and the library function have for some time worn several watches with resulting uncertainties that have limited the profession's abilities to keep pace with our changing society. If one contrasts the stature of libraries in major research universities in say 1960 and 1970 to what it will be in 1980, I fear that libraries have retained their importance only to the extent that they have been financial problems for administrators and perceived operational problems for faculty and students. The importance, the relative importance of libraries in the academic functions of the university - in teaching and in research - has lessened in recent times. Lessened in obvious ways as the disciplines of science and technology have gained a stronger representation in the programs of universities - disciplines it is asserted that really do not need libraries nearly as much as that old standard - the Humanities. The relative importance of libraries has lessened in less obvious, more subtle and insidious ways. The comments about "bottomless pits" are not heard as much any more - at least not among my university colleagues. I fear that this may be because the cherished, if expensive partner in the academic process of 20, maybe even 10 years ago, has become the problem orphan of today. And one simply does not joke about orphans.

I read recently that the only thing wrong with the American railroad industry is that it believes it is in railroading rather than in transportation. The library may avoid following the railroad by recognizing that it is part of the information function and, that the library and the librarian is, or should become the intellectual heart of the information network within a research university and between research universities.

It is a fact that scholarly information most broadly defined is more important to universities today than it was 20 or 10 years ago. Libraries should reflect this growing importance by taking the lead in planning for and providing scholarly information.

Conferences such as yours are indications that librarians will grapple with their future. I hope I can help but the message I wish to convey is that you and your staffs are responsible for your futures and the future of your institutions.

The academic process, that mosaic within which instruction and research is undertaken and the position of the library within that mosaic, must be understood if librarians are to address the critical issues of today and tomorrow. The relationship between ends and means are important. The ends of libraries within universities are to serve faculty and students as they pursue their scholarly, research and instructional activities. Networks - our discussion focus for today - are one of the means to these ends and, as you will perceive shortly, for research institutions I do not believe that ends and means ought to be separated.

I turn now to the discusion of decentralized networks and begin by suggesting we explore the definitions of the terms decentralized and network.

Decentralized has meaning only if it is related to centralized. This truism is not trivial because we must explore the concept of the centralized activity. Further, decentralized must mean plural activities for if a centralized function is singularly decentralized it remains a centralized function. Decentralization can be understood in the first instance, only in relation to a central authority and in the second instance, in relationship to at least one other activity or focus that has also been "decentralized". I shall return to this concept in a moment.

For our purposes, the term network has as its most significant meaning the creation and maintenance of relationships among a number of foci. A network, whether technical or human, manual or automated, is a linkage, a means of communication amongst various activities. A network can be active or passive, one or two way, but in any event it is the roadway, the corridor by which communications is effected. For your purposes a network means inter-institutional activities.

But most importantly, a network has no intrinsic value. The highway systems in our two countries, for example, have no value to our societies until they are used; in fact automobiles that use those systems have no intrinsic value until they are used by an individual for his or her purposes. So it is with library networks: They have no value until they are used by institutions they interconnect and the data they transmit have no value until used by somebody. It is the use of the network that determines its value and its purpose. A library network - electronic or paper - connects human beings and it is the relative commonality of interest of those human beings that determines the character of the network - its goals and objectives.

The juxtaposition of decentralized and networks creates, therefore, almost an infinite number of variations of goals and objectives. The answer to the question "What is a decentralized network?" is derived from the needs of the human beings served by the network. The answer is found not in what is - the technical or electronic capability - but in the ought to be - the needs. The issues before you are not technical or electronic, they are programmatic, political and managerial.

Many of you understand the differences between logical systems and physical systems. In considering "a" or "the" national library network the differences between logical and physical are critically important. For example, in my own organization, Yale University will have its own machine-readable union catalogue, as will Princeton, Michigan, Pennsylvania and the other owners and participants. At the same time, the organization as a whole has a machine-readable union catalogue composed of all members and participants. Logically then we have individual union catalogues on-line and we have a single union catalogue on-line. But if you took the physical system apart you could not find a single catalogue located in any single place. The logical catalogues are created, when needed, from diverse physical elements.

The - read singular in that term - the national library network is a logical description of an activity and we should be able to form it when and if needed. But a number of physical entities or activities quite separate and distinct from one another could form the logical national network. The logical network exists, of course, but not physically. Not only can this be but I suggest to you it must be and, in fact, this is the way a national network ought to be formed.

This is by way of suggesting that a decentralized special network focusing upon the unique requirements of the research library function can simultaneously be an active component of the logical national network. There are others who can speak more competently on the how - authority files, protocols and standards - my interest at this moment is in the whether, - and my answer is that specialized networks combined, if needed, with more general purpose networks form, or may form, the logical national network. I do not believe a physical national network can be effective. The spectrum of needs is too wide to be served by the common denominator that is inevitable via a single physical network. The relationships within a network must be seen by the participants as mutually beneficial: if the network serves too diverse a set of interests this requirement for mutual beneficiality cannot be met.

Perhaps during the discussion period we can explore the necessary conditions for relations between physical networks - note the plural - those relationships between physical networks that might compose the logical national network. Such relationships are critical and must again be based on mutual beneficiality.

Within a research library network we might ask, to begin with, whether or not the relationship between logical and physical as noted above are important. The answer is based upon intent and need. I suggest, first, there is a point where ends and means must be directly interrelated, second, that the point differs by the needs of the institutions involved in the activity and third, that for research libraries, ends and means (the logical and the physical) must be integrated at a high level because of the importance of the networking activities to the research libraries themselves.

First let me describe three levels of effort, any one of which could characterize a research libraries network. These levels are: (1) a bibliographic utility network, (2) a user service network and (3) a program/consortium network. For my purposes I define these three levels as follows:

Bibliographic Utility Network: The collection of machine readable bibliographic records, in a shared environment where, to date, the principal purpose has been to assist the cataloguing function in libraries.

User Service Network: The installation and training of users of bibliographic utilities. This type of network may use the utility interconnection as a base for other programs, for example, resource sharing programs that are discretionary in nature but this has been rather limited to date because user service networks generally have few capacities to provide means to ends.

Program Consortium/Networks: A linkage among institutions for the purpose of creating specific inter-institutional programs, e.g., shared collection development. Interdependencies among institutions (as distinct from discretionary resource sharing programs) in a consortium are created by commision and in one dimension at least the whole is greater than the sum of the parts.

In the United States these three levels are reasonably clear. OCLC, the Washington Library Network and the Research Libraries Group's RLIN system are bibliographic utility networks; NELINET, PALINET, and so on are user service networks (as are WLN and RLG-RLIN): and at the program consortium/network level there are also examples. From my own limited experience the University of California at Berkeley and Stanford University created a partial library consortium as did Columbia, Yale, Harvard and NYPL when they created RLG in 1974. In Canada, I suspect UTLAS is a bibliographic service network. I confess a lack of knowledge of Canadian libraries by my inability to place other activities in the remaining two levels or categories.

These three levels of effort, bibliographic utility network, user service network, and program consortium/network, are the principal components or activities available to form a research libraries network. When you choose one or more of these levels to form a network you define a "decentralized network" for research libraries and concurrently create the goals, objectives and benefits for such a network and, I hasten to add, establish the problems facing such a network.

Obviously, a critical question is whether or not a research libraries network needs to function at the bibliographic utility level. The answer to this question depends upon your judgement of the importance of means to ends. Let me pose the question or the issue in only a slightly different term.

It is possible for a university's chief academic officer, the Provost, in my experience, to construct a document - a request for proposal (RFP) - asking for bids for the provision of library services for his institution. The RFP might include the terms and conditions, the subject areas to be covered, an approximation of the depth of such coverage, and so on. Specifications could be presented on the mean time for turn around, the time between a request for information and its delivery to the faculty or to the student. The RFP could then be issued to a number of commercial firms who might choose to respond by citing an annual fixed price for the services to be rendered. The firm might then rent space from the university, hire the staff and manage the collection. The university would not be bothered with any of the administrative problems surrounding the operation of the library - no union, no choice amongst technical alternatives, and so on. This pattern, by the way, is often followed in dormitory food services and, to a lesser extent, in university computing activities.

Is such a scenario possible? For faculty, students, academic officers and librarians in research universities, at least, this scenario is simply beyond consideration. The important point here is why such an action would not be considered. I believe the answer lies in the intrinsic importance of the library or information function (as opposed, perhaps, to the library organization) to the academic processes of instruction and research. The library function is an integral component of these processes - the intellectual and conceptual structures of the institution's library function must be retained within the academic process itself. To retain intellectual integration and responsibility we believe, in universities, that we must retain operational authority. The library function is not like the provision of heat, light and electricity - that is, it is not a utility. It is akin to and abets directly the magic that happens in the classroom and in the laboratory. In other words, for research universities and their libraries, the ends and means must be fully integrated.

Technology - computers, telecommunications and the like - is a powerful force. Technology brings to the user enormous leverage in accomplishing his objectives. Today's technology - and most likely tomorrow's - has another significant characteristic: it brings with it the common denominator. We dial seven, not eight digits on the telephone, the social security number has nine and we all have both numbers as identifiers. Cataloguing itself is a technology with a principal purpose of creating a standard - a common denominator if you will.

The lesson to be learned is this: the more important the technology is to the operations of an institution the more important it is that the institution adapt the technology to its programs. And the technology that serves institutions with similar requirements is more likely to be adaptable to the individual institutions needs. Peer groups are the foundation of university organization - there is every reason to believe that a technology developed for a peer grouping of institutions will serve their needs better than a more general technology. The choice must focus upon the importance of technology - not only now but five, perhaps ten years from now.

Before noting my answer to the question at hand - must a research libraries network operate its own bibliographic utility - I need to go much too briefly into one other arena, inter-institutional cooperation. We are well past the point where research university libraries ought to acknowledge that alone they can no longer perform their missions. The quantity, cost and demand for scholarly information are increasing so fast that no one research library can keep pace. Research libraries and their universities are interdependent now but by omission. We are at the point where we must acknowledge by commission these interdependencies and in fact to build upon them if we are to maintain the flow of information needed by faculty and by students in research and scholarship.

Thus far I have suggested to you that research universities ought to retain intellectual accountability for the library function on their campuses and that librarians and the library ought to be the focal point for the provision of scholarly information within the institution. I have also suggested that no single institution can provide the information required by the scholarly process. Inter-institutional relationship and shared interdependencies must be forged if we are to maintain that base of information needed by our faculty and our students. Given this it will not surprise you to know that it is my view that a network formed to serve the needs of research libraries, their parent institutions and most importantly, the faculty and students within those institutions must be intellectually and operationally controlled by the research universities and their libraries and further such a network must be a fully integrated activity, that is, it must retain intellectual and operational control of its own bibliographic utility service as the means to the end of the programs established by the consortia or the network more generally. One of my more favorite terms is accountability and in this context I believe that research university libraries must retain the accountability for the provision of scholarly information and because inter-institutional cooperation will be essential to fulfilling the mission of research libraries, research universities must retain accountability for the inter-institutional linkages. The means and the end must be fully integrated so as to insure that the inevitable common denominator is the most appropriate one for research university libraries.

Let me note here that this concept may or may not be true of other institutions requiring information. I am sufficiently unfamiliar with the needs and operations of non-research libraries to know whether or not the proposition I have laid out above is applicable to them. It may not be because inter-institutional information and exchange may be fully satisfied for these institutions through the provision of services from what might be termed a general network or it may be the fact that the services provided by a bibliographic utility can be sufficiently generalized to support quite appropriately the ends of these institutions. In the instance of research universities and their libraries, however, I believe that the concept of "levels of literacy" come to bear. I first heard this expressed by a research library director at the spring meeting of the Association of Research Libraries. He suggested that research libraries had a responsibility to provide information at a level of literacy quite different from non research libraries. That the mission of research libraries was quite different from their colleague institutions in the field and this needed to be understood in the context of any national planning. The allocation of resources needed to attain a proper provision of information at the level of literacy - that is, at the level of complexity - required by research university faculty simply may be greater than need be expended by other libraries. If so, then a separation of means is necessary in order to accomplish properly the ends of different types of institutions in such a manner as to avoid placing undue burdens on one group to support another.

This does mean that research libraries ought to or can divorce themselves from academic and public libraries. Research libraries serve as critical resources to these institutions and it has surprised me to the extent to which academic and public libraries contribute to research libraries. If a research libraries network consortium strengthens the individual institution then it will be better able to fulfill its obligations locally, state-wide and regionally. The challenge here is to create the necessary linkages that allow the research library to maintain dual status - with its peer research libraries and with its geographically-based colleague institutions.

I was asked to describe the organization of which I am a part - the Research Libraries Group, Inc., - in this presentation. I am pleased to do so within the context that you will readily understand that the argument for a specialized research library activity that I have made above will find its manifestation in RLG as I describe it to you.

RLG is owned currently by 12 research institutions - 11 research universities and one independent research library. We have four principal programs. First the shared resources program focusing upon all aspects of the public service function, including inter-library loan, on site access, on-line patron access, and so on. The shared resources program is the heart of RLG - bringing material or information to the scholar or the scholars to the information. Second is the shared collection management and development program - the intellectual base of RLG. The general questions of cooperative collection development are focused here and this aspect of RLG's programs has its time line measured in years if not a decade or more. We are trying to establish the foundation upon which we intend that our members have the capacity if they choose to use it to manage their collections collectively. Also in this second program are the inter-institutional discipline based programs currently including our East Asian Program, the Law Library Program and the Art and Museum Program. We expect soon to have - as our capacities allow - inter-institutional programs focusing upon music, theology, medicine, agriculture and so on. These discipline-based programs focus upon the particular requirements within the research library that grow out of special areas.

The third major RLG program is our Preservation Program, an awesome problem we only dimly begin to understand much less seek solutions to. RLG began by building an on-line data base of microforms held by member institutions to avoid duplication of effort. But this is only the beginning and I admit that in the field of preservation we have no firm direction. The fourth major effort is our Technical Services Program, our information network which we call the Research Libraries Information Network, (RLIN). RLIN is the means to the end for the other programs; for example, on-line reference services, interlibrary loan support and the like underpin the shared resources program and a network on-line acquisitions module or shared in-process file will underpin the shared collection management and development program. RLIN also has its own programs - shared cataloguing, shared acquisitions, authority control and so on.

RLG has a central staff located at Yale and at Stanford. I stress the term central staff because those groups are not RLG. RLG exists when the member institutions work together - the central staff provides support for the members and their staff to reach decisions on program directions and priorities and to accomplish that which is best accomplished by combined effort.

To my knowledge there are no real precedents to what the current members of RLG are proposing to do: the creation and maintenance of a joint operating activity, the service from which is integral to the survival of the individual library-owner itself. We are only beginning to understand the challenges but we believe we must face them. We have found no alternative to RLG that will increase the probability that the current twelve institutions and the additional research libraries we hope to bring into the partnership will be able to traverse successfully the 1980's.

In summary, I offer the following:

First, that research libraries must focus on the whole of providing information required by scholarly and research processes - I wonder what the effect would be of changing the title Director of Libraries to Director of

Scholarly Information.

Second, that a logical national library network is a worthwhile goal but that it does not follow that a physical national library network is needed to accomplish that goal.

Third, that a special network focusing upon the needs of research libraries is compatible with a national network concept and that if a specialized network strengthens research libraries thereby allowing them to fulfill their role as a regional resource for non-research libraries (with necessary inter-connections to other networks) everyone is better off.

Fourth, that technology brings with it a common denominator and that research libraries have responsibilities for a level of literacy that requires a different common denominator.

Fifth, and finally, that a research library network must be controlled by the libraries themselves and must be a fully integrated network.

I hope this was of interest and that we may see some sparks fly in the discussion period. Thank you.

STANDARDS IN A NATIONAL BIBLIOGRAPHIC/RESOURCE SHARING NETWORK

by
Cynthia J. Durance
Director
National Library Network Project
National Library of Canada

I have been asked to define the minimum bibliographic and machine-format standards required for a bibliographic network in Canada. Such definitive answers cannot yet be provided; they must wait until after other network-related decisions are made.

Before the definitive requirements for uniformity of data in a network can be determined, it must first be decided what the objectives of this network are, and what services this network must perform. Having made these decisions, one can then determine the bibliographic functions which must be carried out to support the services. Only when it is known what functions are to be included can decisions be made on the minimum standards requirements.

Many library administrators have been grappling with the concept of a "decentralized network". In my view, this term is redundant, as a network is by definition decentralized and multiple. Perhaps a more relevant question is, "what is the optimal degree of decentralization of network services and their supporting functions?" It is the services and functions of a network that will be variously performed in many places, a few places, or only in one place. Where and how they are carried out will depend on service needs and the economics of providing them effectively.

Therefore, the services a network must provide will determine the bibliographic functions which should be built into it. A decision on these functions will in turn require three other decisions: 1) where and how the functions are best performed; 2) what standards must be built in for both bibliographic and machine format requirements; and 3) the degree of compliance with standards and procedures which will be necessary in order to perform the functions effectively.

This is not to say that, having decided on network functions, one must begin from scratch developing standards to achieve these functions. Much work has been done over many years both nationally and internationally to develop a minimum to maximum range of standards to support certain functions. To "re-invent the wheel" for a Canadian network would be a foolish waste of time and money. Rather, it is preferable to build on that which already exists.

I believe that much of the confusion and criticism of various standards developments stems from an imperfect understanding of the purpose a particular standard is meant to satisfy. If the functions that the standards are meant to support are not clear to the person using them, then he or she is much more likely to find fault with their details. Added to this are the inescapable facts that tasks and problems in the bibliographic area tend to be complex and varied and that it is therefore impossible to create the "perfect" standard that satisfies the requirements of all types of material and all applications of that standard all the time.

In this paper I will touch briefly on the bibliographic and machine-format standards, as both are essential components in a bibliographic network.

Bibliographic Standards

When contemplating minimum levels of standards for bibliographic data, it is crucial to relate that minimum standard to the function it is intended to support. For example, one can talk about the minimum information required to describe an item, or merely to identify it, and in each case the minimum data elements will differ somewhat.

The chart (Figure 1) accompanying this paper attempts to relate bibliographic functions to the minimum record content required to carry out that function. As the chart itself is not totally self explanatory, reference should be made to the accompanying explanation. In brief, the chart displays representative bibliographic functions, and relates those functions to the minimum level of record content required to support them. As one reads in vertical columns from left to right, functions and their supporting record content progress from relatively simple to increasingly varied and complex.

In interpreting the chart, one should keep in mind that the record content indicated is the minimum required to perform the function. At a given level of record content, the function can be supported, but not necessarily effectively or to the fullest degree. For example, the verification function cannot be carried out at all for any item which does not meet the indicated minimum data; nor can the inventory control function be performed at all without at least the data indicated. In each case, the minimum data permits the performance of the basic function for the most straightforward case, but not necessarily for all types of material, and not necessarily in the most efficient or effective way, or in a manner which provides the fullest service.

Since the relation between bibliographic functions and bibliographic records is a complex one, it is important to note what the chart does not show.

1) Actual data elements required in each area of record content are not specified in the chart.

2) The chart does not address the question of the degree of tolerance for non-standard data, or the tolerance for deviation from a standard, which can exist in a data base without having a prejudicial effect on the bibliographic service. Thus, the verification structures to maintain data base quality do not figure in the chart.

3) The chart also does not indicate the standards and conventions which already exist for performing certain functions. These are for the most part well-known, and include Library of Congress and Dewey classification schedules, Library of Congress Subject Headings, the Canadian Subject Headings and Répertoire de vedettes-matière for subject retrieval, and

the Anglo-American Cataloguing Rules for description, bibliographic control and bibliographic research.

This chart then is simply an attempt to graphically represent the relation of record content to function as a basis for further discussion.

It should be noted that not all data in a network data base necessarily requires the same level of record content. It is possible to exclude certain types of material from certain functions, in which case the level of record content could differ for those types of materials. However, in so doing it is important that users realize that those records maintained at a less than complete level cannot be expected to support all functions. The tradeoff between cost of data creation now and restricted use of the records in the future must be carefully assessed.

Whatever the functional configuration of a nationwide network, it will include some combination of local, regional, type of library, and national nodes, making two-way and sequential linkages necessary. Effective linkages will only be possible if the bibliographic and format standards used at all levels are compatible. In theory at least, compatible records are not necessarily identical, but administrators should be aware that because network standards will be dynamic, the effect of even minor deviation in standards used will tend to be magnified over time. Therefore, compatibility with variation will be more difficult to maintain as time passes. For these reasons, it is crucial that nationwide agreement be reached on standards for core data and that this standard be followed conscientiously in order to take advantage of one of the major benefits of a network - use of data created elsewhere.

Why are bibliographic standards needed in a network?

Pierce and Taylor* state that unit costs of maintaining bibliographic control are forced downward by two factors: the larger the percentage of items for which copy is available; and the smaller the amount of adjustment a library must make to fit that record into its own catalogue. Therefore for economic reasons libraries are well advised not only to avail themselves of data created elsewhere, but also must be able to accept and rely on the quality of those data. Economies will increase to the extent that a library can minimize local deviation from widely accepted practices.

The benefits of belonging to a network endeavour will vary in relation to the percentage of records that a library can derive from the network data base without any revision to their record content. The smaller the degree of local adjustment required to the data carried in the network, the lower the cost and hence the greater the benefit of belonging to the network.

Standardization of access points, particularly when coupled with an automated authority control system, has major economic benefits.

The costs of searching files are related both to file size and file integrity. The costs of searching large files greatly increase as the number of "false no hits" increases. By this term is meant the unsuccessful search for a record that is actually present in the file, but cannot be found because the data base contains a faulty or incomplete access point index which cannot lead the user from the initial search term to the preferred search term. How often can one justify the costs of the unsuccessful search of a data base, when the item sought is present in the data base? If one is paying telecommunications costs as well as search charges, the failure is an even greater expense.

Similarly, the costs of searching large data bases increase with the number of "false hits" whereby a record is displayed or transmitted which does not fulfil the purpose of the quest. The reduction of the incidence of false hits is also dependent on the control and integrity of the access point files. Automated authority systems dramatically reduce false hits, by simultaneously providing and linking variant forms of an access point in the file. In this way, the likelihood of retrieving the item sought using terminology familiar to the user is also improved.

By using automated authority support systems one can adjust outdated terminology so that the record content conforms to user expectations. One of the greatest benefits of automated authority systems in a network environment is that they simultaneously provide the control of access point data and the flexibility to absorb change to that data.

Standards are by their nature dynamic because the functions and services they support are dynamic. With automated authority control we need no longer be inextricably bound by past practice.

MARC Formats

MARC formats are communication formats, intended to be used as a standard vehicle for the communication of bibliographic data on magnetic tape. This does not mean that internal formats in any one institution or consortium must be identical to the standard communications format, but only that the internal format should be convertible to the communications format, and vice versa.

The need for communications formats is also based on economics. Their existence means that any library or consortium wishing to communicate with another can do so by maintaining only one conversion program, from internal format to communications format. It can also load data from elsewhere using a second program converting data from the communications to the internal format. The economic advantages are obvious. The alternative is to be forced to maintain two separate conversion programs for each unique format utilized by each institution with which one wishes to exchange data.

Formats are also related to the bibliographic function performed. The CAN/MARC format offers a range of possible bibliographic detail and content designation, with minimum level MiniMARC at the lower end of the range as a minimum level for reporting to the national union catalogue, and full CAN/MARC at the top of the range for communicating national bibliographic multi-function records.

Communications formats are used to exchange data by magnetic tape. In the move towards open system interconnections they will be supplemented by protocols for computer-to-computer communication. However, it will be some time before tape exchange will be totally replaced by on-line communication, but the exchange of data on magnetic tape sent by mail may gradually be replaced by the point-to-point transmission of data in batch mode.

Conclusion

In conclusion, let me summarize the decisions that need to be made before bibliographic or format standards can be established for the network.

Questions which must be resolved include the following:

1) What services must be supported by the network?

2) What bibliographic functions must the network support to provide these agreed upon services?

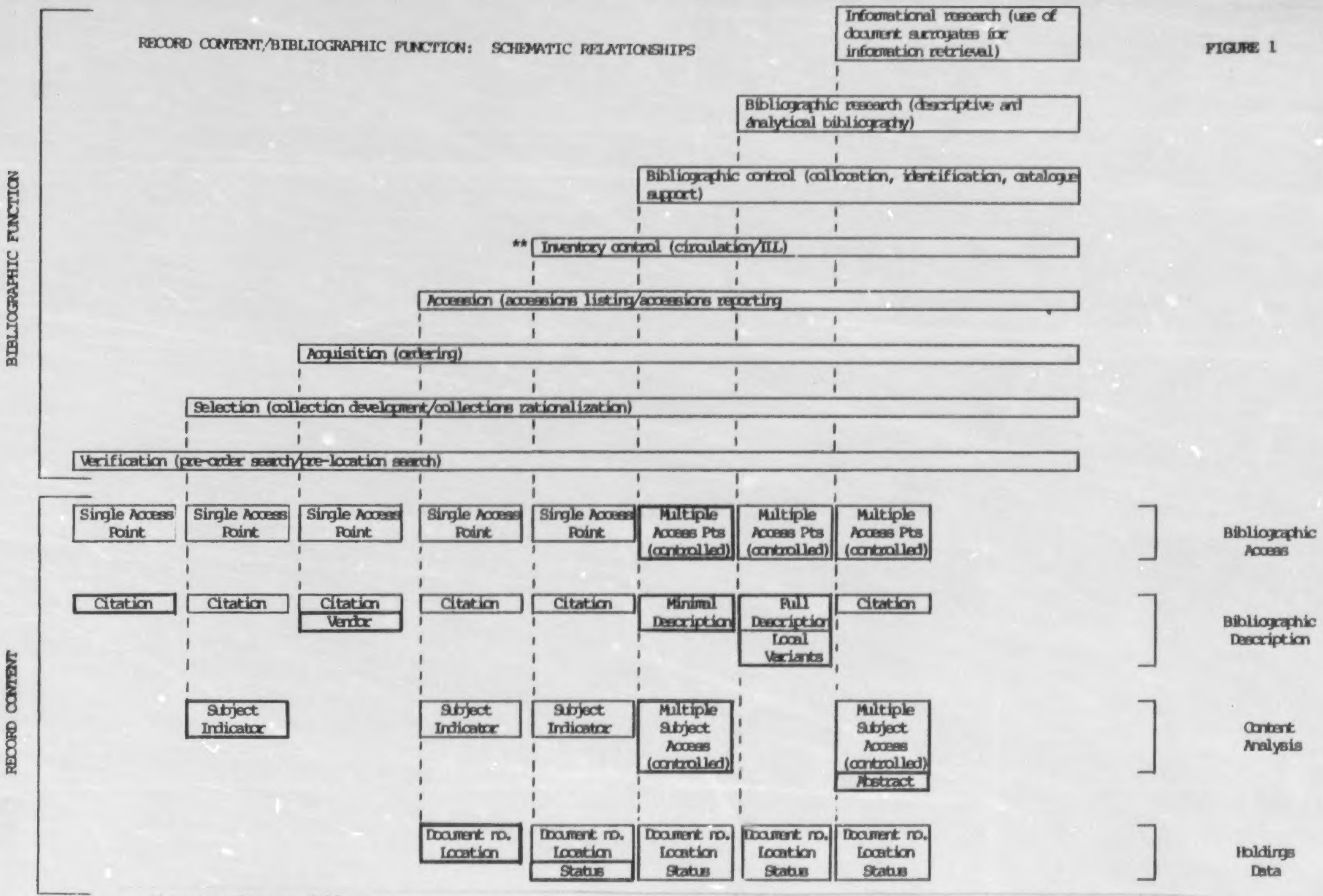
3) What degree of decentalization of functions and services will provide an acceptable level of efficiency and effectiveness of service?

Only when these questions have been answered, can decisions be made on the degree of uniformity that is necessary, and in what areas it is essential in order to achieve the objectives of a bibliographic network as effectively and efficiently as possible.

* Pierce, Anton R., and J.K. Taylor. "Model for cost comparison of automated cataloguing systems." Journal of Library Automation, 11(1), March 1978, p. 6-23.

RECORD CONTENT/BIBLIOGRAPHIC FUNCTION: SCHEMATIC RELATIONSHIPS

FIGURE 1


BIBLIOGRAPHIC FUNCTION
Informational research (use of document surrogates for information retrieval)
Bibliographic research (descriptive and analytical bibliography)
Bibliographic control (collocation, identification, catalogue support)
** Inventory control (circulation/ILL)
Accession (accessions listing/accessions reporting
Acquisition (ordering)
Selection (collection development/collections rationalization)
Verification (pre-order search/pre-location search)
RECORD CONTENT
Single Access Point
Single Access Point
Single Access Point
Single Access Point
Single Access Point
Multiple Access Pts (controlled)
Multiple Access Pts (controlled)
Multiple Access Pts (controlled)
Bibliographic Access
Citation
Citation
Citation
Vendor
Citation
Citation
Minimal Description
Full Description
Local Variants
Citation
Bibliographic Description
Subject Indicator
Subject Indicator
Subject Indicator
Multiple Subject Access (controlled)
Multiple Subject Access (controlled)
Abstract
Content Analysis
Document no. Location
Document no. Location
Status
Document no. Location Status
Document no. Location Status
Document no. Location Status
Holdings Data

** Read column as follows:
To perform the bibliographic function of "inventory control" (using processes such as circulation and ILL), the supporting bibliographic record must contain at least the following components: a "single access point", a "bibliographic citation", a "subject indicator", and holdings data which provide a "document identification number", a "location", and document "status." Record components in columns to the right are also sufficient to support "inventory control", and may be essential to support that function at an enhanced level.

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Figure 1
Explanation

Caveat

This chart is a schematic representation of the relationships between bibliographic functions and the minimal record content required to support those functions. It presents a simple overview of the relationships and does not attempt to be definitive or exhaustive in detail. It should be considered indicative, not prescriptive.

Assumptions

In designing the chart, attention has been focussed on the actual function performed, rather than on the process used to achieve that function, or on end products resulting from those processes.

Each function is viewed in the chart as a spectrum, the extreme left of which shows the minimum record content required to perform that function in the most straightforward case. For a variety of reasons (e.g. size of file, type and variety of material) higher than the minimum record content will often be required to adequately perform a given function.

In general, bibliographic functions and record content are displayed in order of increasing complexity, from left to right. Specific data elements in the record content are undefined in this chart, but increase in number and complexity as the functions they support approach greater sophistication. For example, the term "subject indicator" on the left of the chart may refer to broad subject terms such as "Literature", or broad class numbers; on the right side, "subject indicator" may refer to detailed class numbers or complex subject term assignment.

Explanation

The top half of the chart contains the range of bibliographic functions performed in most libraries or library consortia, in ascending order of complexity. In parenthesis after each function, typical processes used to perform the function in the library and the library network context are listed.

The bottom half of the chart is divided into four segments, labelled on the right, which represent four aspects of record content contributing to bibliographic control: bibliographic access; bibliographic description; content analysis; and holdings data.

Each bibliographic function is aligned in vertical columns with the minimal record content required to begin to support that function. For example, while a single access point and a citation are minimal record content for the simplest verification function, the selection function cannot be performed without the addition of at least some minimal subject indicator. For each new function, the essential added record content component is outlined with a heavy line.

The column of record content "boxes" aligned at the extreme left of each function comprises the minimal record required to support the function. Each box represents an area for which the need and level of standards must be considered in relation to that function (i.e. data elements specified, and data quality controlled).

For further aid in interpreting the chart, the reader is referred to the note at the bottom of the chart explaining in narrative style the meaning of one extracted column. Other columns can be read in a similar fashion.

Definitions

For the purposes of this document the following definitions apply:

Citation: description sufficient only to identify the item

Minimal description: level of description equivalent to AACR2 Level 1

Subject indicator: any type of subject access including classification numbers.

Acknowledgements

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DISTRIBUTIVE PROCESSING IN THE CONTEXT OF AN AUTOMATED BIBLIOGRAPHIC NETWORK

by
S. Michael Malinconico
The New York Public Library

When automated bibliographic systems were principally the product of dilletante efforts of librarians who had somehow come to dabble in high technology, the cost of the computing resources needed for their operation far exceeded the costs of developing them. The capabilities of those systems, as one might suspect, were directly proportional to the amateurishness of the efforts that brought them into existence. The beginnings of a cycle which could easily have become self perpetuating was very much in evidence: Systems of necessity had to be conceived on a very modest scale; as a consequence their capabilities were limited; because of their limited capabilities only modest resources were devoted to them; thus, systems, of necessity had to be conceived on a very modest scale, thus, ...

Third generation computers which featured the ability of a single device to execute several programs simultaneously seemed to portend the solution to all of man's computing problems. In particular they held out hope that libraries could operate their systems unobtrusively on behemoth machines principally dedicated to some other purpose. This solution had at least one major flaw. Bibliographic systems have a voracious appetite for computing resources. Systems, which originally operated unobtrusively on a computer facility, make increasing demands on that facility as their sophistication increases.

This problem was early recognized. In the mid-1960's one apparent attempt to solve it was a joint systems development effort known as the Collaborative Library Systems Development Project, the CLSD project. The architects of that project must have reasoned:

i. automated library systems of sufficient sophistication to be considered seriously require that substantial computing resources be devoted to them;

ii. no single bibliographic application can by itself economically justify the resources required;

iii. third generation computers have already demonstrated the ability of a single device to support several applications simultaneously;

iv. however, the demands made by automated bibliographic systems are such that they cannot readily share a computer facility with applications of other types, i.e., they seem to require dedicated processing facilities;

v. advances in software engineering have demonstrated the advantages of the 'data base' concept, i.e., a single, non-redundant file of data serving a variety of applications;

vi. thus, if one can develop a comprehensive, integrated system, the cost of the necessary system resources can be amortized over a number of individual library activities.

This scheme, if it was to be successful, obviously required an enormous investment in research and development. The Collaborative Library Systems Development Project was an attempt to muster the resources needed for such a development effort.

The product of the CLSD project would have been a system of considerable scope intended to operate on a single, large-scale computer. The system proposed needed to support a number of activities in an integrated manner before it could be justified economically. However, such an ambitious system would require some time to implement, as much of it had yet to be developed for the very first time. This created some insoluble logistics problems. In order for it to be economically viable in operation, the entire system, or a major fraction of it would need to be in place. Individual parts of the system could not be made self-justifying. Thus, no simple method could be devised for phasing-in parts of the system without enormous operating subsidy. Of equal importance, since the system was intended to operate on a single computer, and since the time to develop it was necessarily long, the possibility existed that the system would be obsolete long before it was completed. The significance of this latter consideration was by no means lost on the systems analysts of the 1960's. They, thus, set themselves resolutely to seeking after that quintessential design that would remain impervious to advances in technology, or by divination to anticipate in their designs the technology that would exist when the proposed systems were completed. From our perspective a decade and a half later we know that neither of these approaches is even remotely sensible.

Projects such as the CLSD had hoped to distribute costs among a number of activities and to rely on the cumulative savings this would garner as the means to support a system. Cooperation among a number of users was restricted to joint developments efforts, which posed enormous coordination problems.

Thus, matters might have remained mired had it not been for the pioneering efforts of OCLC. Rather than attempt to develop a system which performed many functions for a single user, OCLC set about developing a system which performed a single function for many users. The development effort was, therefore, reduced to a point where it was manageable by a single agency. Further, a single system, which could be self-supporting, could be implemented relatively quickly. Additional capabilities, it was expected, would be added later to a functioning system.

The success of shared cataloguing systems has also helped to demonstrate yet another important characteristic of automated bibliographic systems: the costs of the hardware and software which comprise them is relatively small when compared with the costs associated with creation of the bibliographic data on which they operate. Shared data creation and use makes possible substantial operational savings while still leaving enough over for the support of a sophisticated system and an extensive telecommunication network. Thus, it can be expected that the economic viability of a system will most likely be portional to the degree to which it supports shared data creation and use.

OCLC as a consequence of its spectacular success has made it increasingly apparent to designers of future network systems that the demand placed on the central network computing facility by shared cataloguing alone can fast outstrip the ability of a single, monolithic system to respond. The obvious solution to this problem, and the solution adopted by OCLC, is to interpose a number of smaller computing devices (minicomputers) between the communication network and the main processing system, as well as between the processing system and the data files. This has the effect of 'distributing' the system's processing functions. For example, in this manner all of the housekeeping activities needed to service a network of several thousand terminals can be made to reside in computing devices independent of that needed to perform bibliographic processing. Thus, as the network grows, one simply needs to increase the number of 'front end' devices in order to keep pace with the need to service an increasing number of terminals.

In addition, each of the front end devices described above can be engaged in truly simultaneous processing. Third generation computers, even though they give the appearance of simultaneous processing, actually perform most of their operations serially. Thus, the configuration suggested can offer far greater responsiveness than can even a very powerful monolithic system.

Likewise, separate computing devices can be placed between the main computer and the data files, and used to advantage. For example, they can be employed to compute the address of a desired record on a mass storage device while the main computer does something else, such as sorting the responses to a different query. Computing the location of data records is something that must be done many times for each transaction, thus, if this chore could be moved into a dedicated device, the main computer has far more free time to perform the principal functions for which it is intended.

The result of a configuration such as that described above is that the system's discrete processing functions are divided among a number of individual system components; hence, the use of the term 'distributive processing'. It should be intuitively obvious that such a configuration leads to a system with enhanced responsiveness. We can make this more obvious by suggesting that other functions can be moved from the main computer into front end devices. For example, we can move transaction editing routines out of the main computer into a front end minicomputer. If transactions are edited before they reach the main computer, those in which errors are detected can be rejected immediately, hence, only error-free transactions will be relayed to the main computer. Thus, processing can go on without interference from the transaction traffic that will need to be rejected. Likewise, the system user will learn far more quickly that a transaction has been rejected than he would have otherwise. There is probably nothing more frustrating than being kept waiting to be told that one is inept.

It should be clear that if processing can be distributed among a number of computing devices located at a central site those devices could be just as easily removed to a site distant from the computing facility, but close to the terminals generating the transaction traffic. Though this will be true in many cases, it will not in general be so. The reason is quite simple. If a device is interposed between the communication network and the main computer, then data must be transmitted twice - roughly doubling the transmission, and hence response time. The reason that front end devices operating in close proximity to a main computer do not exact such performance degradation is that data are transmitted at 'computer channel' speeds - approximately one million bits/second (compared with remote communication speeds which are normally only 2400 or 4800 bits/second).

The general condition which must obtain before remote distributive processing proves to be an effective system configuration is that most transactions either be satisfied or rejected in the distributed device.

The rapidly decreasing cost of computing devices has served to make such distributive systems most attractive. It has been estimated that the cost/performance ratio of computing systems decreases by an order of magnitude, i.e., a factor of 10, every five years. Mass storage costs have been decreasing at a nearly equal pace - approximately 25% each year. This latter consideration serves to gainsay much of what we learned about data base design, i.e., it may not be as necesary as we once thought to avoid data redundancy. In fact, there are instances in which redundant data storage can result in both performance and economic advantage. This is particularly so when configuring a network system.

The ability to store data redundantly at various locations in a network makes it possible for us to satisfy the basic condition which determines whether remote distributive processing is efficacious with greater frequency. That is, by duplicating certain elements of a central data base we can, more frequently, conclude or reject transactions before they reach the central computer, hence, we are able to satisfy the conditions that would dictate that processing be carried out closer to a terminal than the computer.

For example, consider a typical application: It should be obvious that an automated circulation control system will generate an enormous volume of transaction traffic, which would severely tax the communication and processing facilities of any central monolithic system. Thus, it would appear that a system which can intercept the overwhelming majority of transactions which do little more than update or examine fixed status information, at the point where those transactions originate will be far more responsive than a system which attempts to process all transactions centrally.

A similar argument can perhaps be made for automated acquisitions systems. Here, however, an additonal consideration might be introduced which would strongly favor locally stored redundant data. It is essential that an acquisitions system operate, until the item ordered is received with whatever citation is initially used to order it even if a more authoritative citation is developed in the interim. However, it is probably more desirable to use the most recently available citation in a network in-process file. This can be effected most readily if an acquisitions system is designed in such a way that an order results in both a control record maintained locally whose bibliographic data content remains immutable and a network data base record which is replaced as soon as authoritative cataloguing data becomes available.

Distributive processing will doubtless play its most prominent role in the development of on-line catalogues. Many librarians have resolutely expressed their intention to progress directly from card catalogues to on-line catalogues. However, few of them have indicated where they are planning to obtain on-line catalogue services. OCLC's periodic bouts with sluggish response time should serve to indicate that the centralized systems operated by the bibliographic utilities are already hard pressed to keep pace with the transaction traffic generated from shared cataloguing, let alone on-line catalogues. Recall that in shared cataloguing applications a terminal operator is invariably working with book-in-hand, therefore, he or she will generally choose the most efficient route to a bibliographic record. Patron use of an interactive catalogue on the other hand, will far more often be for an ambiguously defined item. Two conclusions follow from this:

i. The majority of catalogue searches initiated by library patrons will require that a number of bibliographic records be reviewed before a search is completed: in particular it will frequently prove necessary to browse through portions of the catalogue file. Browsing can be either intentional or unavoidable. A search for an item whose identity is ill-remembered might constitute the former, whereas a subject search will constitute the latter. The important point to bear in mind in this regard is that the system will be required to retrieve and prepare for display a large number of bibliographic records, as library patrons will very infrequently employ search arguments which result in unique responses, such as Library of Congress card order numbers or standard book numbers.

ii. The sophisticated information retrieval capabilities of an automated system will far more frequently be invoked than they would have been had the system been used in a shared cataloguing mode. An on-line catalogue will permit a variety of innovative accesses to its contents, e.g. users will be able to combine search arguments in Boolean combinations, and impose other restrictions on responses. For example, the system might be instructed to restrict its responses by form, language, date of publication, or physical location of material. It should be obvious that innovative access strategies will in general require that the system retrieve numerous potential responses and then perform a considerable amount of processing in order to restrict the responses according to the access criteria specified.

Thus, we could argue that the similarities betweenan on-line catalogue and a shared cataloguing system are mainly superficial. Attempting to impose both requirements on a single sytem may prove to be inadvisable. A shared cataloguing system must be capable of reflecting data base additions and modifications virtually instantaneously, however, it need not provide particularly sophisticated retrieval capabilities. An on-line, interactive catalogue, on the other hand, does not pose any particularly stringent requirements for data base update, however, it does imply frequent data base access accompanied by substantial processing activity. Thus, we find that the requirements posed by these two types of systems rather, than being identical, are actually complementary. The logical consequence of this is that rather than providing both facilities through a single system perhaps it might prove more desirable to consider separate, weakly coupled systems. The rapidly decreasing costs of computing, and mass storage devices makes this alternative eminently feasible.

Though space does not permit us to consider the possibility at length, it should be obvious that if a comprehensive system is configured from a number of discrete, dedicated devices whose costs are commensurate with the service they provide, then the logistical problems associated with implementing such a system are greatly ameliorated, hence, development can progress in a far more orderly manner. In addition, one is far freer to replace individual parts of a total system, hence, one can far more easily keep pace with technological advances.

But, perhaps the most significant consequence of the technological advances of distributive systems is the profound effect they will have on the topology of national networks - not simply their technical topology, but more importantly their logical topology. By distributing the processing capacity, or capability, of a network we of necessity must distribute the governance of that network. In an environment in which distributive processing is dominant, the potential for exercising hegemony by a single institution or agency is severely diminished. However, the need for a network coordinating agent is more than proportionately increased. The principal problem then confronting us is not the application of technology, but its effective management. The major concern of the immediate future is no longer the mastery of technology, but the comprehension of a new process, which some have named the electro-political process.

The truly important consequence of the application of modern technology is perhaps the dissolution of the insulating effects of space and time. That is, within the context of an electronic network each participant is intimately bound up in the actions of all others. Distributive processing then will not only enhance the responsiveness of an automated system, but may provide us the means of reintroducing the necessary insulation, and if necessary, translation mechanism that permits individuals to cooperate without surrendering the richness of diversity.

Thus, in summary the conditions which gave rise to our monolithic network systems very likely no longer obtain. The relatively low cost of computing equipment and mass storage makes it eminently reasonable for us to consider developing devices dedicated to particular, discrete processing functions, thus permitting the processing activities of a comprehensive integrated system to be distributed among a number of devices situated perhaps at diverse locations. One of the advantages this permits is that the computer can be brought to a problem rather than transmitting a problem over a crowded communication network to an already overburdened computer.

THE MANAGEMENT OF THE GREAT CANADIAN LIBRARY NETWORK
OR
IT WOULD BE EASIER TO FIND THE HOLY GRAIL

by
Basil Stuart-Stubbs
University Librarian
University of British Columbia

I have been asked to speculate about the governance and management of some kind of bibliographic network embracing the libraries of Canada. As a prelude, I wish to speak first about the management of networks in general. After all, from the viewpoint of the management theorist, networks are all the same: they tend to have the same objectives, and they tend to encounter the same difficulties. This I discovered after I did my thing as a librarian, namely, after I searched the literature and did a little reading.

For the purposes of my discussion, it is necessary to introduce just two definitions. I'm going to use the word "institution". I mean by that an independent organization with its own management structure; it could be an airline or an academic library, no matter. And I'm going to use the word "consortium", by which I will mean an organization in which a group of institutions participate, usually but not necessarily on a voluntary basis. A library network, whether it is a network for the sharing of catalogue data or of collections, is a consortium. So is a conglomerate of corporations manufacturing cat food. The point I wish to make is that it is possible to generalize about man's attempt to organize his activities in certain ways. What libraries are trying to do is not unique, and we can learn something by looking around us.

There is one curious thing about the management literature, however. There is an abundance of articles on the formation of consortia, or networking, in all fields of human endeavour, specific to particular experiments. But there is a paucity of articles on this phenomenon as a phenomenon, and on the principles of the successful management of consortia. Maybe that is because consortia are not so easily managed, as I think I will demonstrate, and the theorists haven't got much advice to offer. This affords me an ideal opportunity to indulge in my own profundities.

Regardless of the nature of the institutions forming a consortia, the reasons given are the same. They boil down to three. One: the consortium will allow the participating institutions to achieve some objective which they could never attain as independent units. Two: the consortium will make it possible for institutions to share or to make more effective use of existing resources. Three: the consortium will make it possible for institutions to achieve economies immediately or in the future. If you pause to think about it, every proposal for library cooperation touches on those same points.

It must be admitted that these are seductive promises. There is something compellingly logical about them. But in whatever sphere they are

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pursued, similar complications arise, and these are chronicled in the literature, whether the consortia have been created among social welfare agencies, computing centres or clothing manufacturers.

In reviewing these complications, I'd like to treat separately those involving the institutions, and those involving the consortium. The list is long, and I have to break it down somehow.

In regard to institutions, I came across a statement in one article which I think worth quoting at this point: "A consortium's potential is primarily set by the characteristics of its members, rather than by the nature of the organizational structures or by the leadership capability of the consortium staff."

A lot of the complications I mentioned flow from that observation.

Consortia encounter difficulty when their member institutions do not share the same priorities.

They encounter difficulty when their member institutions are of different character, for example, if there are disparities in size, or complexity, or markets, or productivity.

They encounter difficulty when their institutions are at different levels of technological development, where this is a factor.

Geographical separation in itself apparently creates difficulty. And difficulties arise out of particular situations. For example, the consortium can suffer if the leadership of even two member institutions is in conflict, because this pulls the group in two directions; general disharmony produces worse results. If there is a change in leadership, the balance within the consortium can change. If there is conflict within an institution, and persons within that institution bring different positions to the governing structure of the consortium, it is obvious that there will be trouble.

Consortium participation can result in an additional workload for institutional staff, perhaps already overburdened. This can yield everything from resentment to apathy to opposition.

This is a long list of woes. I conclude with one very potent source of difficulty: when the requirements of consortium participation threaten the autonomy of the institutional member, or remove from it the ability to control its own resources, one can't expect cooperation. Here's another quote that underlines that fact: "For each consortium created, the primary orientation of the participants will remain institutionally introspective. Cooperation often will be pictured as something the other fellows will do when they come around to one's own way of thinking."

I am sorry that I must recite to you these sad realities. But they are realities, as experienced by consortia of all kinds, past and present. And up to now, I have only been speaking from the point of view of the institution. Now for the consortium itself.

When institutions collaborate, they usually come up with the idea that the

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consortium needs some kind of focus: an office, a telephone, and someone on top of it all. Again, a quotation: "Simply creating a one-man organization does not usher in the Age of Aquarius in which the subscribing institutions are henceforth to be miraculously imbued with harmony and understanding, sympathy and trust abounding." Did I hear someone out there say "amen"?

Again examining the experience of many consortia, it would appear that it is very difficult to make the right kind of appointment as consortium director. Generally, someone with previous management experience in a member institution is selected. Such individuals may know how to run a conventional organization, with its integrated structure of hierarchies. But running a consortium is something else, and it is not unusual to hear the member institutions complain that the director of the consortium is behaving too independently. But if strength turns out to be a vice in the consortium director, so is weakness, because member institutions are just as quick to express concern over a lack of leadership or initiative. The position of consortium director is a very difficult one to fill, and even more difficult to occupy, calling for great diplomatic skill. The experience of consortia is that the director, and the kind of relationships he establishes with the member institutions are crucial to the success of the cooperative enterprise.

But even when a consortium finds the absolute paragon of managers, the very fact that the consortium office is at a distance from the member institutions makes for difficulties. The consortium is in itself an organization. It needs its own clear objectives, and the member institutions have to be wholly in support of those objectives. However, it is an unusual person who comes to work, within his own institution, and thinks first of the welfare of the consortium. Inevitably, there is a psychological distance between the employees in the institution and the employees in the consortium, a distance which is only made worse by physical separation.

One of the disadvantages that grows out of this physical or psychological distance is that the institutional members become out of touch with the internal realities of the consortium office. It is usually the case that consortia are founded with the highest of aspirations, and the founding members create an unreasonable workload for the consortium office. Typically, the consortium office itself is full of energy, born out of initial enthusiasm, and it sets its own impossible objectives. When target dates are missed, when projects remain incomplete, when details fail to be cleared up, the disappointed mutterings begin.

Perhaps the area from which the greatest difficulties emerge is that of the management or governing structure. Just how does the consortium relate to the member institutions, and how do the member institutions relate to one another?

We are all familiar with the means we employ. The usual pattern is for there to be a "council", representing all institutions. From the council a "board" is drawn. The council or the board may also create a variety of committees, subcommittees, task forces, or whatever, depending on the complexity of the consortium's concerns. It has to be determined how these entities will communicate with one another, and with the consortium office. Along the way there has to be considerable delegation, trust and communication.

If we are familiar with these administrative devices, we also know from our own experience about their disadvantages. We know that it is difficult to convene meetings of people who work in different locations. We know that convening any kind of meeting requires preparation, including the printing and distribution of documents, all of which creates more and more deadlines. We have difficulty delegating to other institutions and to individuals in a remote consortium decisions which vitally affect our own organizations. As for communication, trying to talk to a consortium is much harder than trying to talk to one's own organization, and we all know how hard that can be.

In fact, when I reflect on all this, and on our own daily experience as administrators, I am struck by our innocence in establishing any kind of consortium in the first place. To run a library, which is theoretically under one's influence in some ways, is a difficult task. Why should we think that an organization of organizations should be any easier? My purpose up to this point in my remarks has been to indicate to you that experience everywhere suggests that there is a wide gulf between the conception or idealization of a consortium, and its establishment and effective operation.

Interinstitutional cooperation has been an objective of librarians and their associations since at least the nineteenth century. If we have at times fallen short of the goals we have set for ourselves, some of the reasons may be traced to the very nature of cooperative mechanisms.

Forewarned, they say, is forearmed. If we know where the shoals are, surely we can sail around them. So let us now consider what the implications of the foregoing might be for the establishment of a national consortium for the sharing and utilization of bibliographic information and library collections, or even for the establishemnt of a consortium of consortia, or a network of networks, which seems to be the way we are in fact headed.

First, it will be necessary to define objectives as clearly as possible. Hopefully, these can be stated in terms so simple that no one will be confused as to their meaning.

The Canadian Union Catalogue Task Group attempted a general statement of this kind, in its first recommendation, where it spoke about the objective of equalizing access to information for all citizens. A lofty ideal, and, some say, impossible of achievement. Nevertheless, I still think it not an unworthy goal against which to assess our activities. Networking should not be an end in itself, mere busy work. Surely its purpose is to raise the level of library service, and if it doesn't, in my view, we shouldn't be wasting our time.

This morning Hope Clement's paper was presented, in the appendix of which the objectives behind the National Library's proposed five year plan are listed. To abbreviate them, they are: sharing, economy, preservation of the national heritage, and conservation of materials. These certainly meet the requirement of clear, definable objectives. They are also unarguably desirable.

In his comment this morning, Ritvars Bregzis proposed that we approach the definitions of objectives not from the highly general, but from the specific. If I interpret him correctly, I think he is saying: "Let's stop philosophizing. Instead, let us decide in concrete terms what we want to do. Having finished this, let us then formulate our general statement." This is a sound approach, and one that Guy Cloutier began for us this morning.

So much for objectives. I think there can be agreement on these, whether in the national, regional or provincial context. How that agreement is reached and expressed, I don't know. Maybe we should have a referendum, if we can think of the question.

Second, having reached agreement on objectives, there must be more than lip-service paid to their achievement. The members should be prepared to give an institutional priority to the consortium or network, even though this might be at the expense of the institution. But sacrifice for the common good is difficult, and hard to extract if the goal is distant. Most institutions, on contemplating participation in a consortium, will ask: what's in it for me? They will look for benefits to themselves, not to others. In Guy Cloutier's words this morning, the network must identify with individual, as well as group goals and objectives. Guy concluded, and I agree with him, that network participation will require us to modify our attitudes and our behaviour. But I would suggest that the enthusiasm of consortium participants will wane quickly as costs to them begin to outweigh benefits, however noble the ideals embodied in those objectives.

Third, a sensible, realistic governance structure will need to be designed, and the members will have to be as strongly in support of this structure as they are of the objectives. That is because there is no sensible, realistic structure which can involve all of the members all of the time in all of the decisions. Delegation of responsibility, accompanied by trust, is essential.

I'm sure that there are many among you who would agree that we have yet to achieve satisfactory systems of management for the various consortia in which we already participate. In our respective communities, provinces and regions our libraries by virture of their size tend to make of us key figures in adventures in cooperation. As a result, we spend a lot of time in meetings, preparing for meetings, or following through on the results of meetings. We are, it seems to me, overorganized and overinvolved. But can we escape it?

I can see no way out of it, except by adopting a model similar to that of the Centre for Research Libraries. That organization has a Council, to which all members belong; in fact, each member has two representatives on the Council, the librarian and his boss. The Council elects a Board, and the Board does the work. The Council meets annually, and some Board members are replaced every year, to distribute the load. The Council is kept well informed, and members can take their concerns to the Board or the Center Director at any time. It's a model worth considering on the provincial or regional basis. Some version of it could be workable, whether the consortium is organized from the top, by a branch of government, or from the bottom, by members who have organized themselves, with or without the benefit of the Corporations Act.

But what about a national network? I must confess that I do not yet have a clear enough picture of what is meant by that phrase to hazard a guess as to how it should be managed. Insofar as the National Library's participation or leadership is concerned, they may choose to establish a consultative group, in addition to the National Library Advisory Board. It might be made up of managers of the various consortia, or provincial librarians, or people who know something, or people who know nothing. Or the National Library could hop around the country, consulting furiously with any organization that rears its head.

On the other hand, libraries themselves could form national consortia for one purpose or another, as is happening in the case of RLIN in the U.S. CARL could form its very own consortium for collection sharing, for example. And it could dream its own management structure into existence.

Fourth, once one settles on a management structure, whatever its nature, it is an absolute requirement that lines of communication be extended in all directions and kept constantly open, for both sending and receiving news. This activity is so important that in a large consortium it needs separate personnel. It is all the more important in management structures in which the authority to decide has been delegated to a small group.

Fifth, if the consortium needs an administrative focus for its activities, it should spare no effort to find someone who would at other times, in other places, qualify for sainthood. That person should recognize that the institutional members have an interest and a definite stake in the success of the consortium, and should be sensitive to the members' desire to be consulted and informed. On their side, the members should be aware of the complexity of the consortium director's assignment, and attempt to be supportive and understanding.

Sixth, ends should be tailored to means. That is, in agreeing upon objectives, or dates for achieving those objectives, care must be taken not to attempt to do more than can be done with existing resources.

I think those of us from British Columbia must admit that we are guilty of overlooking this requirement. We are attempting to do too much, too fast, with too little. Mind you, we are succeeding, but that is because virtually everyone associated with the development of BCUC and NET is working overtime, or in effect doing two jobs. We are all stretched thin, and I don't know how long we can go on doing it.

When it comes to the National Library and its promising five year plan, I cannot help wondering whether the resources can be found to carry out all those assignments within the schedules proposed. It strikes me that additional support, in the shape of dollars and staff and space must be found at a time when the Treasury Board is not only unsympathetic but positively hostile. The National Librarian is aware from personal experience when he cannot pitch, catch, be on all bases, and cover the outfield all at once. Neither can the members of his staff

Which brings me to a seventh, and final requirement. Money. Where is it going to come from?

Taking the macroeconomic perspective, almost all of it comes from one place: the taxpayer. Two questions. 1. Will the taxpayer provide more for libraires? 2. Will networking result in savings, so that the appropriate amount spent on libraries will remain the same?

My own answer to the first question is that the taxpayer will pay more for library service if he is promised additional benefits. That has been our experience in B.C. In practical terms, that means convincing one's immediate superior, and the government at municipal, provincial and national levels to provide support in reference to specific demands. This is not done by talking to ourselves in endless meetings and workshops. As I see it, the only reliable source of financial support for networking must come through governments. Foundations and individuals can't come up with that amount of money, and they aren't consistent.

My answer to the second question is no, networking will not result in savings which will make a redistribution of present resources feasible. For networking, you will pay more, and you will get more. Hopefully.

That's a good note on which to conclude these observations - on a note of hope. Considering where we were a decade ago, there is no question that in Canada we are making progress - library service is definitely improved over what it was ten years ago. In the area of technological development, we have a more than respectable record. For all of our peculiarities as a nation, or two nations, we have some advantages in this business of cooperation, and smallness is one of them. Considering that we can bring together in one room all of the people who manage academic libraries, and their supporting experts in the area of automation, considering that collectively we are responsible for, and at least theoretically in control of most of the manpower, collections and money allocated to libraries in Canada, we should be able to achieve some of those goals and accomplish some of those tasks we have been learning about today.

NATIONAL NETWORK DEVELOPMENT:
PROBLEMATIC YET PANDEMIC

by
C. Lee Jones
CLR Program Officer

The alliterative elements of the title may appear a little forced, so let me elaborate a bit. Evidence suggests that national network development is considered a substantial problem in both Canada and the U.S. In fact, the possibility of developing networks that are truly nationwide in scope is open to question - hence problematic. Yet the feeling that there is a need for nationwide library and bibliographic services, or for national planning in network development, has infected a large portion of the professional library population in our respective countries. I hesitate to compare it to, say, the common cold, but concern for network development is certainly pervasive - hence pandemic.

If pandemic, can we innoculate each other against those mistakes we've already made? If we can, the innoculation will take place during discussions like this. Marianne Scott asked me to summarize the Council's Bibliographic Service Development Program (BSDP) and to reflect upon the problems that we have encountered to date in our attempt to move toward an integrated bibliographic network. Note the use of the term "integrated." Recent experience might lead us to expect the terms "national" or "nationwide." The effort under way is an attempt "to form or blend into a whole" - the precise definition of "integrate." The BSDP is committed to this blending of all bibliographic records into a widely available set of data bases. We are as committed to eventually blending non-U.S. data bases into the network as we are at present to the incorporation of U.S. data bases.

For those who have not been exposed to this CLR program before, let me briefly sketch its background, its first year of operation and its active program elements.

The Council on Library Resources, a small, private, operating foundation, is primarily focused on the problems of academic and research libraries. Bibliographic control has for years been a major concern of academic and research libraries, and CLR has, in response to these concerns, been involved in a number of bibliographic control projects. Some of these projects are OCLC, BALLOTS, Chicago Data Management System, CONSER, COMARC, IFLA's UBC and even AACR2. In nearly every case CLR has been joined in funding these activities by a number of other agencies like LC, NLM, NEH, NCLIS, NSF and many private foundations.

The Bibliographic Service Development Program, in a very real sense, grew out of these efforts and is, in fact, a highly focused extension of them. Funds for the program have been received from seven private foundations and the National Endowment for the Humanities.

The program works toward three major objectives:

1. To assure effective bibliographic services for all who need them,
2. To improve the quality of bibliographic products,

   and

3. To provide purposeful control of costs of bibliographic processes in individual libraries.

To assure satisfactory progress toward these objectives there is a small Management Committee composed of Warren J. Haas, President of CLR; William Welsh, Deputy Librarian of Congress; and Frederick Burkhardt, first Executive Director of NCLIS and a former President of the American Council of Learned Societies.

To provide program advice and guidance there is a BSDP Program Committee composed of Carol Ishimoto, Harvard; Henriette Avram, of LC's Network Development Office; Fred Kilgour, OCLC; Ed Shaw, RLIN; and Rod Swartz, WLN. We also use a large number of other people who serve as consultants, special task force members, and advisors. Of course, since the BSDP is a CLR program, the ultimate responsibility for it flows from the CLR Board of Directors.

The principal beneficiary of every BSDP program initiative is the individual library user. However, the BSDP operates through a series of organizations the functions of which might, with some latitude, be identified with certain major parts of an automobile:

First, there is LC and other primary producers of bibliographic records. They are the vehicle's generator.

Second, the utilities, with their record distribution functions, represent the distributor.

Third, the network brokers might be considered the carburetors, since they do affect the flow of demand for records.

Fourth, the libraries themselves might be considered the vehicle's engine - that's where the real bibliographic record power is.

Finally, the user, the operator or driver of the vehicle. Here the analogy really breaks down because the user is not in the driver's seat except as their needs are expressed through libraries. If the libraries are the engine and also the driver, we may have the opportunity for a mismatch of requirements and products. The November U.S. White House Conference on Library and Information Service might be viewed as an attempt to put the user back in the driver's seat.

Let's deal quickly with the projects that are now in progress under the auspices of the BSDP.

The Authority Control problem has been identified over and over again as one of the most critical areas requiring cooperative action if there is ever to be an authority controlled, integrated, bibliographic network. After a late September meeting involving the three U.S. national libraries (LC, NLM, and NAL), the three U.S. utilities (OCLC, RLIN, and WLN) and several CLR consultants, there was unanimous agreement on four points. All participants, and these included policy officers, indicated that they were willing to commit their institutions to work toward several common objectives:

1. A single authority file.

2. A single set of requirements for authority control systems.

3. Design elements for all authority control operating systems.

4. Common procedures for additions to the authority file.

The fact that agreements were reached on such basic points surprised a number of observers and pleased the participants. The Council intends to commission someone to prepare a set of requirements and design elements and to submit these statements to the same group that met in September. Modifications to the statements are expected, after which we will be in a position to prepare an implementation plan.

Related to this project is one initiated by the Library of Congress. We have been asked to help LC convert 100,000 name authorities used in LC MARC records from manual to machine-readable form. This would speed the implementation of LC's own internal authority control system as well as make these available to the library community generally.

Another project relates to the use of the CONSER data base. Under Title IIC of the U.S. Higher Education Act, several institutions have been funded to create union lists of serials. It seemed appropriate to assure that each effort capitalized upon the work done in the CONSER project. So in concert with the Office of Education, CLR is convening a meeting of active CONSER participants and the Title IIC grantees. Among the five items on the agenda are two of special interest to the BSDP.

1. Encouragement of the use of CONSER data elements in the union list projects.

2. Development of a strategy for displaying holdings statements.

Relative to the second item, we do not need to know, in a national data base, the detailed holdings of Scientific American for every participating library. There must be a strategy developed for the rational display of required holdings so that the file will be as useful as possible. So far, no acceptable strategy has been proposed.

The BSDP also has a strong commitment to the development and implementation of standards in a number of areas related to bibliographic control.

First, AACR-2. We have formed a Joint Committee on Bibliographic Standards, the first function of which is to assist LC in obtaining comments from the utilities and other major bibliographic centers on the AACR-2 options that will be selected for the machine environment. A representative from the National Library of Canada sits as an observer on this committee.

Second, we have funded a group to work with a consultant to LC's Network Development Office whose responsibility it is to remove the LC-centric elements from the MARC communication format, those elements required only for LC internal processing. This project has the tongue twisting title of "Interinstitutionalized MARC." Maybe we should call it everyman's MARC.

The BSDP is also interested in standards for institutional identification and for detailed serial holdings. We have a consultant at work in these two areas with contact established with the appropriate ANSI-Z39 subcommittes.

Another area of great interest to the BSDP is the area of linkages between utilities - without links we will have a series of nonintegrated bibliographic data bases. When the BSDP first got under way, the initial impulse was - let's link what we have - LC, OCLC, RLIN and WLN. Well, the complications began right there. LC was constrained from online activity with outside institutions. OCLC was hesitant because of the unknown impact on its costs and services. RLIN and WLN were ready to try and, indeed, signed a bilateral memorandum of understanding agreeing to share data bases and subsystem development.

It is good to have two utilities dedicated to links of some sort, but our objective is to assure access to all extant bibliographic records. Therefore, a study has been commissioned to examine the nature of several possible links; to assess the economic and service impacts of each possible linking strategy on not only the utilities, but also the network brokers (SOLINET, NELINET, AMIGOS, etc.), as well as individual libraries, and library users. Battelle Laboratories has agreed to conduct the study and is one month deep into the seven-month project. The Council expects the following products.

1. A set of cost-benefit analyses, by utility, for shared cataloguing, interlibrary loan, and reference searching activities.

2. An analytical model of an integrated network and possibly of an integrated network less one party - any party.

3. A set of recommendations for action.

This is a terribly complex study and to help CLR monitor and guide its progress a group of seven consultants known as the Battelle Project Monitoring Group has been organized. Their first meeting was on Monday of this week. Because of the widespread effects this project may have, the group is composed of people from university computing centers, library schools, public libraries, federal libraries, the CLR board, and the information industry. We anticipate that their broad range of interests will be useful not only to CLR but to Battelle as well. That anticipation was more than reaffirmed at the first meeting of the group.

There is yet another area of BSDP concern that has received only cursory attention. We are interested in assuring that individual libraries have the capacity to use bibliographic products to help manage their own internal collection control problems. This raises a number of questions. What services are best provided by a utility? Which best supported by the individual library? Do the answers to these questions depend upon the size and activity of the library in question? Probably so. The activity against a bibliographic file generated by public access terminals in sufficient numbers to meet local demand, may in some libraries have to be supported at the local level. Some will suggest that the highest activity functions - that is those with the greatest demand on a machine file - ought to be locally supported. We don't yet have answers to these questions but we hope to be seeking them in the near future.

Now, what have we learned in the BSDP over the course of the last year that might prove useful in CARL's present effort to organize a national bibliographic resource sharing network?

First, the BSDP would not have been necessary at all if there had been a responsible, credible, and responsive coordinating group in operation. When was the "right" time for the creation of such an organization? As soon as it was clear that certain activities could more effectively be handled by such a unit. I would not limit the concerns of such an agent to bibliographic control matters, but would add such matters as access services, for example, a national periodical and/or lending activity, a national preservation program, etc. The coordinating agency would not and should not have prescriptive powers over individual library operations but should be a facilitator to help provide options that can not be provided by individual institutions alone.

Failing the existence of such a coordinating organization, a group determined to embark upon a cooperative activity such as a bibliographic network must recognize the need for a governance mechanism. Basil Stuart-Stubbs discussed governance from a variety of perspectives this afternoon. Others have also noted this requirement. I'll not belabor the point further.

From the U.S perspective, let's look at the Research Libraries Group (RLG), which now defines its target institutions as ARL institutions. What would have happened if the RLG initiative had been an ARL activity from the start? One can guess that such a move might have torn the organization apart because of the strong allegiance many had and continue to have to OCLC. Or would a united group of ARL customers of the OCLC have stimulated that utility to cooperate more effectively with RLIN (nee BALLOTS)? It is useful to contemplate these "what might have happened if..." scenarios as you begin to define a CARL bibliographic network activity.

Throughout the day you have heard certain problems and benefits of a bibliographic network highlighted. Some cautions have been offered as well. I want to underscore one particular reality, one that is obvious, but far too often either ignored or discounted. As each institution pledges to cooperate and contribute to this very exciting set of developments, the tendency is to count up all the benefits to be derived and to ignore certain other elements, among which is the factor of autonomy. To the extent that an institution already shares in a variety of systems and adheres to any number of standards - AACR-2 being an obvious one - it has traded some autonomy for the benefits these systems and standards bring. Now, a matter of economic expediency needs mention.

Whatever system or set of systems that CARL ends up with, there will be a real cost for every option offered. The extreme example is OCLC, which allows a nearly infinite set of options in card formats and allows a library to catalogue according to its own whims. Admittedly, aberrant records are not allowed into the OCLC data base (unless it is the only record for the item and, identifiably so). The other extreme is WLN where all participating institutions must use a prescribed set of cataloguing conventions. Caution needs be exercised when finally deciding the range of options to be provided in the network from a cost and autonomy point of view. WLN system libraries have traded more autonomy than OCLC libraries have, but then there are some significant differences between the two systems. It is for you to decide which of the differences might be advantageous.

As long as we are focusing on costs and finances, let me point out a source of utility incompatibility that has become apparent over the last year. OCLC charges are based on a first-time-use charge, or FTU. Such a billing policy causes OCLC to consider the bibliographic record as a capital asset. Consequently, when a project is proposed that might require the sharing of that property - that capital asset - the bibliographic record - a cost recovery is required in spite of social good or service benefits that might accrue.

RLIN and WLN in essence charge for services rendered. In this environment, the bibliographic record is incidental, not central. The central concern of these utilities is the character of the services provided. Projects implying the sharing of records from these utilities must only demonstrate a service and/or cost benefit in order to be attractive.

The resolution of this very basic conflict is not known, but we are confident that there is a solution, and many individuals are committed to finding it.

The characterization of a bibliographic record as a capital asset presents a real social problem - one that CARL will have to face as well. Can society afford to have the information about information controlled and, hence, by implication, subject to restricted access? I think not. In fact, I guess I'm close to a bibliographic socialist. Information about information must not be restricted. That does not mean that it should be cost free - but it does mean freely or easily available.

There is yet another factor to this record ownership issue. It is the source of funds used to create bibliographic records. What portion of the records have been generated by public funds? Certainly, every LC MARC and CAN MARC record; certainly most records generated in publicly supported institutions; and those generated in private institutions operating with grant monies from the federal, state or provincial government. Bibliographic records may have to be tagged to indicate their public source and so their immunity from private ownership claims.

Let's return to CARL's consideration of a bibliographic network and note three basic requirements that will form the basis for any action.

1. Construct a statement of the basic goals of the effort and agree to adhere to those goals.

2. Select achievable targets for your initial, indeed all subsequent projects. Make progress deliberately with modest, constructive moves. Limit the risk exposure.

3. Do not look for all encompassing solutions. Select those solutions that respond to the needs expressed in the goals statement.

Now there are at least four specific areas that must be defined in some detail in preparation for an action plan. There should also be some consensus on these elements.

First, there should be broad agreement on the services to be provided by the network and a priority for their implementation. You may all want a management control subsystem to be available on the network, but do you want it first, fifth or last?

Second, as many of the political factors as possible need to be identified. The more honest and thorough this task, the sharper the issues will be defined. It may also help to understand the various positions and requirements of the participants and antagonists.

Third and fourth grow out of the first two considerations. Mike Malinconico has already told you what existing equipment and systems will do, and if you have identified the services required, then you know what needs to be done. If there is a close match between what is required and what is already available, you need to look at that option very carefully. But drifting through the process of identifying the technology to be used is the cost of that technology - not just the initial cost, but the development and maintenance costs. Some of the presently available computing systems are very low in purchase or lease cost, but they may not be supplied with sufficient or appropriate software to do the job.

Before I ever wrote this paper I was cautioned that Canadians do not like to have U.S. citizens come north and prescribe Canadian action. I assure you that I haven't the skills to be prescriptive in any sense of the word. At the same time I've been asked to reflect on what might have been done differently in the U.S. in the development of an integrated network. In that sense I offer these concluding remarks.

First, a cautious approach, while occasionally frustrating may prove to be most profitable. Move with deliberation. Move with facts and requirements in hand. The value of basic groundwork is seldom overestimated.

Second, distinguish between deliberate progress and delaying tactics. In this group of institutions, it is unlikely that any would find delaying tactics to their advantage. But there are institutions that, although they may not be ready to move themselves, do not want to be left behind either. It is seldom useful to wait and often more effective to continue moving toward your objective.

Third, governance is likely to be the most difficult issue to resolve. For a small homogenous group it will not be terribly difficult. As the group grows and diversifies the opportunities for dissatisfaction multiply. In any case, an organization is often better served by senators who have the interest of several constituencies at heart rather than by respresentatives who have only one set of loyalties.

Finally, whatever develops needs to provide an international interface. In the U.S. state boundaries are often greater hindrances to cooperation than they are facilitators. State librarians often seek to have the state library be the node for network activities for all libraries in the state. We find state boundaries often as arbitrary as you may find provincial boundaries in Canada. By extension, our mutual national boundary can be viewed as arbitrary especially in the area of bibiliographic control. There is not much about that border that affects the character of the data or the standards used in the generation of the data. So, I shall conclude with a plea to continue the cordial, cooperative relationship that presently exists. Indeed, it may well develop that library users in the U.S. and Canada will, in the not too distant future, be able to search a common, integrated set of data bases. Then all of the problems of our pandemic network development efforts will have been worthwhile.

ORGANIZING FOR A NATIONAL BIBLIOGRAPHIC/RESOURCE SHARING NETWORK:

ACTION PLAN

by
Hans Möller
Undergraduate Area Librarian
McGill University

Has this conference come to a clear conclusion? Have the speakers and resource people agreed on the problems of a national bibliographic/resource sharing network for Canada's academic libraries and have they shown us how to overcome difficulties and how to solve problems involved? Not exactly, although we have heard a variety of presentations from some of the most distinguished and competent persons in the field. No conference, no matter how well it is organized gives clear answers to the questions. A remark only too common among conference goers is: "Well, it didn't really resolve anything but it was nice to meet some colleagues who struggle with the same problems as I do."

It is obviously too much to expect that a conference involving a lot of people can resolve problems such as the ones we have discussed here. First of all, a conference is by definition an occasion to air ideas, exchange viewpoints and learn about the latest advances in the art. It is not my role here to contribute new ideas or cause us to imagine new and beautiful vistas. It is my role to suggest an action plan - not exactly an enviable role as such.

Yet, this conference is far too important to all of us to dissolve it with the words - "it was nice but once again it didn't really resolve anything". We cannot afford that. The CARL libraries have too long been discussing the bibliographic network ideas to put them aside, once again, as agenda items for next meeting or yet another conference. In CARL's life, as an independent association, the network issues have been discussed year after year, but no combined actions have been taken by CARL as such. This conference surely has been very carefully planned, and preparations have taken a long time, but in fact it has been planned for years among directors of CARL libraries. I feel strongly, as most of you probably do, that it is time for real action. Time is running away from us, and if we do not act now and find real solutions to the real problems in our way, then other developments will run ahead of us and each major library will find, or be forced into, ad hoc solutions, and we will have missed the opportunity for combined action, and coordinated action. Already all of our libraries have individually automated single functions on their own, only some of these functions are combined or coordinated. I believe a combined and coordinated action will allow us to exploit our combined resources, and to provide improved services to our users, students, professors and researchers, all in a more cost effective way than we can individually.

We have heard at this conference how difficult it can be to rally our combined forces to common action, how differences existing among the various institutions often block the way for common action. One is tempted at times to dismiss these differences as signs of jealousy and parochialism, yet it may be too simplistic an explanation.

I come back to Guy Cloutier's paper on what CARL really wants. I feel Guy is absolutely right in stressing the need for CARL libraries to define their common goals and objectives. It is good and in fact a classical management practice to define goals and objectives, and hard it is to do so, but always an extremely constructive activity. Invariably such an exercise brings focus to essential issues and forces the architects of goals and objectives to take a stand on such issues.

I recall Guy Cloutier's excellent phrase: "Once we know our exact destination, where we are headed for, we should be in a better position to determine the kind of transportation we will prefer".

It seems to me that one action CARL needs to take is to formulate common goals and objectives and determine how a network can relate to the objectives of individual libraries as well as CARL libraries as a whole. Nobody else can take that action for us; only we can formulate goals and objectives ourselves, and only we can arrive at a consensus.

From listening to the speakers and discussions yesterday, there are two major issues which stand out as terribly important to all of us:

1) document delivery

2) computer to computer communication.

The first problem is one we are all faced with in any interlibrary loan activity. A fast and cost effective delivery system is essential in all efforts to provide the user with ready access to the documents themselves. The sophisticated, technical solutions may be near at hand as we have heard, but these need to be investigated in the light of a possible CARL network. We may also, as Guy Cloutier suggested, seriously investigate what existing commercial delivery systems can provide right now. So, I suggest for a second action effort that document delivery systems be studied immediately.

Computer to computer communication involves practical aspects of networking, especially in Canada, as long as we are not thinking of one big system, but a number of smaller systems cooperating with each other. This does reflect the mood of most CARL libraries and it needs to be seriously and immediately studied. This then is the third action effort which I propose: computer to computer communication.

I have proposed three action projects for CARL to consider. They are, I believe, all concrete, precise and realistic as subjects for immediate action.

I do not profess to know how CARL should attack these problems. Should you set up action task forces to use a current phrase? It is of course up to CARL and your executive to decide how you should proceed and who should participate in these efforts.

AMERICAN REACTOR

Richard De Gennaro
University of Pennsylvania

Some of you are no doubt wondering what a nice young fellow like me from the United States is doing at a CARL conference on Network development. Why did I come here and what can I say that will be useful to you without getting myself all enmeshed in Canadian library politics? Being an active member of several networks including OCLC, PALINET, and now RLG, I have my hands full with U.S. library politics so I really don't need to get involved with yours.

The reason I am here is that Marianne Scott called me last August, when I was relaxing at home on vacation and invited me to come here and give my reactions to your proceedings. She apparently chose me precisely because she thought I was an American who would give a candid personal reaction to the subject and that is what I am going to try to do. So if I appear to be mixing myself in your business it is because I was asked to do so.

Let me say right out that I cannot summarize the proceedings from an American point of view as the program suggests. I can only give a series of brief comments and reactions to things that I have heard. I am not going to try to tell you how we build networks better in the U.S. or how you should build them here. The only thing I can do is to make some observations about networking and resource sharing based on my own knowledge and experience. Since all of my knowledge and experience are based on U.S. style networking, I leave you the task of trying to relate what I say to the Canadian scene.

The first observation I want to make is that cooperation among librarians, in Canada as in the U.S., is an unnatural act. It is not exactly illegal when practiced among consenting adult librarians, nor is it totally immoral, but it is unnatural.

Next I would like to outline a few necessary requirements for successful network development.

1. Behind every successful new endeavour there is a committed or even fanatic entrepreneur - a person with a vision of the future and a sense of mission. In the library field I think of people like Donald Urguart, the founder of the National Lending Library at Boston Spa, Fred Kilgour of OCLC, and Ed Shaw of RLG. Do you have such an entrepreneurial type leader for a Canadian network? I simply do not know. But I do know that nothing will happen if it is left to committees to do the job. CARL as an organization probably can't do it because it does not have an operating capability and full time staff.

2. You need a climate that favours the development of a network or that favours the emergence of a leader-entrepreneur that you can and will

follow. I don't know about Canada, but in the U.S. library world no one trusts anyone to lead anymore. ARL is losing much of its former influence. The nation's two preeminent research libraries - the Library of Congress and Harvard - both show signs of turning inward and of abdicating their traditional leadership roles in the research library community. The ALA membership is increasingly forcing its leadership to deal with side issues and ALA as a professional organization has lost much of the credibility and influence that it had ten years ago. I hope things are better in Canada.

3. It seems to me that you need an intellectual foundation for a CARL network. What I have in mind is the kind of rationale for a research library network that Ed Shaw was giving for RLG in his presentation yesterday. We need such a rationale for a research library network because without it we are simply operating on the usual ad hoc basis and responding to various changing and dimly understood pressures - economic, political and technical.

Librarianship needs some new guiding ideas if it is to survive the stresses and changes that the 1980's have in store for us. We are under tremendous financial pressure now. We have never been too well funded even in the best of times, but now it is the pits and the outlook is for a lot more of the same in the decade ahead. Libraries are in serious danger of losing relevancy and becoming museums of the traditional book. I don't know what the answer is for Canada - or for the U.S for that matter - but I am making my personal commitment to and staking my hopes on RLG as the organization that has the best chance for helping research libraries to make the kind of transition and transformation that they are going to have to make in the 1980's to survive and prosper.

I think university research libraries have to reaffirm their mission to serve and support scholarship. We have no future as popular libraries. Our future, if we have one, lies in serving the needs of our faculty and students - locally and through special research library networks like RLG. It may be that we have already gone too far down the road toward becoming state, provincial, or regional public libraries, but in the States I think there is still time for us to reaffirm our proper mission. Research libraries can't be all things to all people. The boom of the 1960's is over now and we have to concentrate our limited and diminishing resources on serving the essential needs of our primary users - our students and faculty. I am convinced that an RLG type consortium can help in the U.S. but I don't know what kind of special consortia or networks would best suit Canada's needs.

I am sorry to say that the impression I got during this conference is that there is no consensus and unity among you for a Canadian research library network. I hope I am mistaken about that.

Now let me turn for a moment to comment on the National Library of Canada's planning effort. The planning documents are very impressive, I have never seen their equal, and I hope the plan can be realized. However, I have learned that good plans do not necessarily lead to good systems. Sometimes meticulous planning takes the place of action and serves as a substitute for it. Sometimes excellent technical plans cannot be implemented for valid political reasons - or even invalid political reasons - there is no real difference in the end.

OCLC was never planned in detail - it was, and perhaps continues to be, a vision that constantly changes to suit the changing requirements of the network. Long-range plans are frequently overtaken and made obsolete by events. But it is always hard for those who fathered a plan to abandon or modify it when it becomes obsolete. They have a vested interest in preserving their child.

Experience in the U.S. and elsewhere leads me to doubt that national library networks will emerge from detailed long-range plans drawn up by central planning staffs. Rather, OCLC, WLN, RLG/RLIN - and perhaps even the British network - all emerged from small scale operations and grew and developed in a pragmatic way. Regional developments may be the key to network development in Canada. As Hans Möller said this morning, some action is needed.

I think it is well to remind ourselves that most of the problems that beset us come from outside the library environment and many of the solutions will also have to come from outside. Some of the solutions will come from the private commercial sector. The SDC, Lockheed, and BRS online bibliographic search services - all commercial ventures - are automating some of our reference functions for us. Microform and reprint publishers have done much to help us with the preservation problem and they will no doubt do more in the future. University Microfilms Inc. - with the collaboration of ARL - has helped to solve the problem of access to dissertations in libraries. We tend to underestimate what the private commercial sector has done for us in the past and what it can do for us in the future.

We should stop promising more than we can deliver. Individual academic libraries promise to give their faculties and students full access to comprehensive research collections - first through locally held collections and now through networks. We could not deliver on the first promise and we will probably not be able to deliver on the second.

In the States the National Commission on Libraries and Information Science has set goals that it will not be able to fulfill. The NCLIS goals promise everything to everybody regardless of geographic location or level of need and all without cost to the user. We cannot deliver such services. Everywhere libraries are in decline. Our budgets are being squeezed and cut and inflation is killing us. Resource sharing will help stave off the effects of these trends but it will not permit us to deliver the contents of the Folger Shakespeare library to a Shakespeare buff living on Nantucket Island. When someone lives on Nantucket, they forego the pleasures, cultural advantages, and pains of the city in return for the other advantages that come from living on Nantucket. People who live in the country have always had to do without city advantages and vice versa. We cannot change that through networking or resource sharing. We can close the gap to some extent as we have through radio and television, but scholars who have convenient access to a large research library will always enjoy an advantage over those who do not. We should encourage the Shakespeare buff to go to Washington to use the Folger's rich resources on site. We simply cannot afford to ship the contents of our research libraries to people who live at a distance. It was not feasible in the past and it will not be feasible in the future - with or without networking.

It is important that the library profession set and pursue realistic and achievable goals. Our idealism must be tempered by economic realities. It is foolish to imagine that we can all become bibliographically rich by pooling our bibliographic poverty, or that we can survive for long by living off and consuming the resources of other libraries. Resource sharing is no answer to galloping inflation, Proposition 13, or wholesale budget cutting. It is no substitute for continued regular and generous support for well-stocked local libraries which are dedicated to satisfying most of their users routine needs from their own in-house collections. By itself, the network creates no new resources. It merely facilitates the sharing of existing resources. But we must husband those existing resources and increase them in the future. It would be a tragedy if those who fund our libraries were to misunderstand the purpose of resource sharing and use it as a rationale for further reducing library appropriations. Resource sharing will permit us to do more with less by pooling our resources, but only if we keep the pool replenished. Resource building and resource maintenance deserve equal emphasis with resource sharing.

CANADIAN REACTOR

D.W. Halliwell
University Librarian
University of Victoria

One of my concerns before this workshop was that some people might come here with the expectation that we would leave being not only familiar with the mechanisms of a network, but well on the way to forming one. Having been through the beginnings of BCUC, I was not sure that any two-day workshop could lead to the drafting of a blueprint for any future network, although the future for Canadian libraries will be brighter/less bleak when a more formal network or network of networks comes into being. Co-operation among libraries may be unnatural, but we have persisted in it throughout the years and it will play a more prominent role in our futures. Concern about a false raising of expectations was exacerbated when I first saw some of the documents, for I felt that we might be focusing on a CARL network that would not take sufficient cognizance of the framework within which it must be set. I have been relieved of those apprehensions.

During the last two days there has been some discussion of the range of possibilities which lay before us - from the practical to the blue sky and beyond. The emphasis has most definitely been on the here and now and the practical - particularly the overwhelming importance of the roles of the individual institutions: the role of the library within its individual institution. We are first and foremost responsible to our own users. We have been encouraged to enunciate goals and to endeavour to keep them appropriate to the goals and objectives of our own institutions. From them we will be able to decipher those points of attack at which the inter-institutional activities can begin. The degree, intensity and purpose will vary. We must devise our plans in such a way that we can accommodate those differences.

It is entirely appropriate that this group should look at CARL libraries or at academic libraries generally, but it is a plain fact of life that each of our institutions exists within a political framework and that it is normally a provincial body on which we must rely for funding.

Mention has been made of regional and provincial networks. BCUC is a provincial network and makes what progress it makes because of funding from the provincial government in addition to our institutional budgets. We have to look at our funding jurisdictions in our funding concepts. Moving from the primary institutional level to this next level - the regional network - will necessarily involve us with public libraries and special libraries in our areas; it is at once the most crucial and the most practical step.

There will then remain two components within the scope of what we describe as a national bibliographic resource sharing network. Those components are:

1) the contributions to an overall national bibliographic resource sharing network by the one type of library which already has a national mandate,

i.e. our national libraries;

2) the development of whatever mechanism is required to tie together all other components - for bringing in the regional and provincial networks and for bringing in the national libraries.

It is incumbent on our national libraries to exercise much of the leadership role in the development of a national network, both because it is part of their mandate and of the new role statement presented by the National Librarian to his Minister and because it is part of what Canadian librarians have asked the National Library to do for the past thirty years.

In the near future we will have an opportunity to examine that role statement. We have already looked at the five-year plan, and we have been invited to respond to both documents. We, as CARL directors and as individuals, will be responding. We as CARL members must ensure that our voice is one that will be listened to, that can be listened to with some confidence and that can represent a point of view which the National Librarian and his colleagues can use in supportive evidence in moving towards a Canadian library network. It is incumbent on CARL and those who make up CARL to examine those two documents thoroughly and come up with realistic and effective responses putting our institutional and group case forward. It is my hope that other library constituencies in the country will be doing the same. As CARL members, although we put our own needs foremost, we must be careful that we do not lose sight of our colleagues in other types of libraries in doing so.

This conference has been effective in its planning, concept and presentation, and in its setting. I have been educated, and have enjoyed the experience.

EPILOGUE

At a general meeting of the members of the Canadian Association of Research Libraries held immediately following the Conference on Networking (October 26, 1979), there was a review of several of the issues which had surfaced most frequently. The CARL Executive was requested to prepare recommendations for future action. At the June 1980 Annual General Meeting, approval was given to proceed in the following areas:

Interlibrary Loan

To develop ways for improved document delivery and to provide data for further analysis of Interlibrary Loan traffic between both CARL members and other libraries.

Bibliographic

To develop an inventory of existing bibliographical data bases in Canada as a basis for further study of the co-ordination of existing bibliographic networks. CARL proposed that the National Library of Canada's National Library Network Project undertake this study, and subsequently was gratified to learn that the project is currently under way. (1)

Further study will be undertaken to examine the many issues relating to access to machine-readable bibliographic data for cataloguing purposes, and the relationship of distributive data bases to centralized utilities.

The establishment of goals and objectives for a CARL Bibliographic Resource/Sharing Network will also be undertaken.

Summary

The sharing of ideas and the identification of problems related to networking, as well as the discussions of ways and means to achieve objectives made this Conference a worthwhile event.

The most important priority of CARL libraries must be to provide the highest possible level of service to users on both a regional and national basis. To accomplish this effectively will require a concerted, co-operative effort in the eighties - a decade which will be characterized by increasingly rapid technological change.

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(1) MacLean, Ian. National Library of Canada Bibliographic Data Base Inventory. Vancouver: IAS Information Automation Services, 1980.